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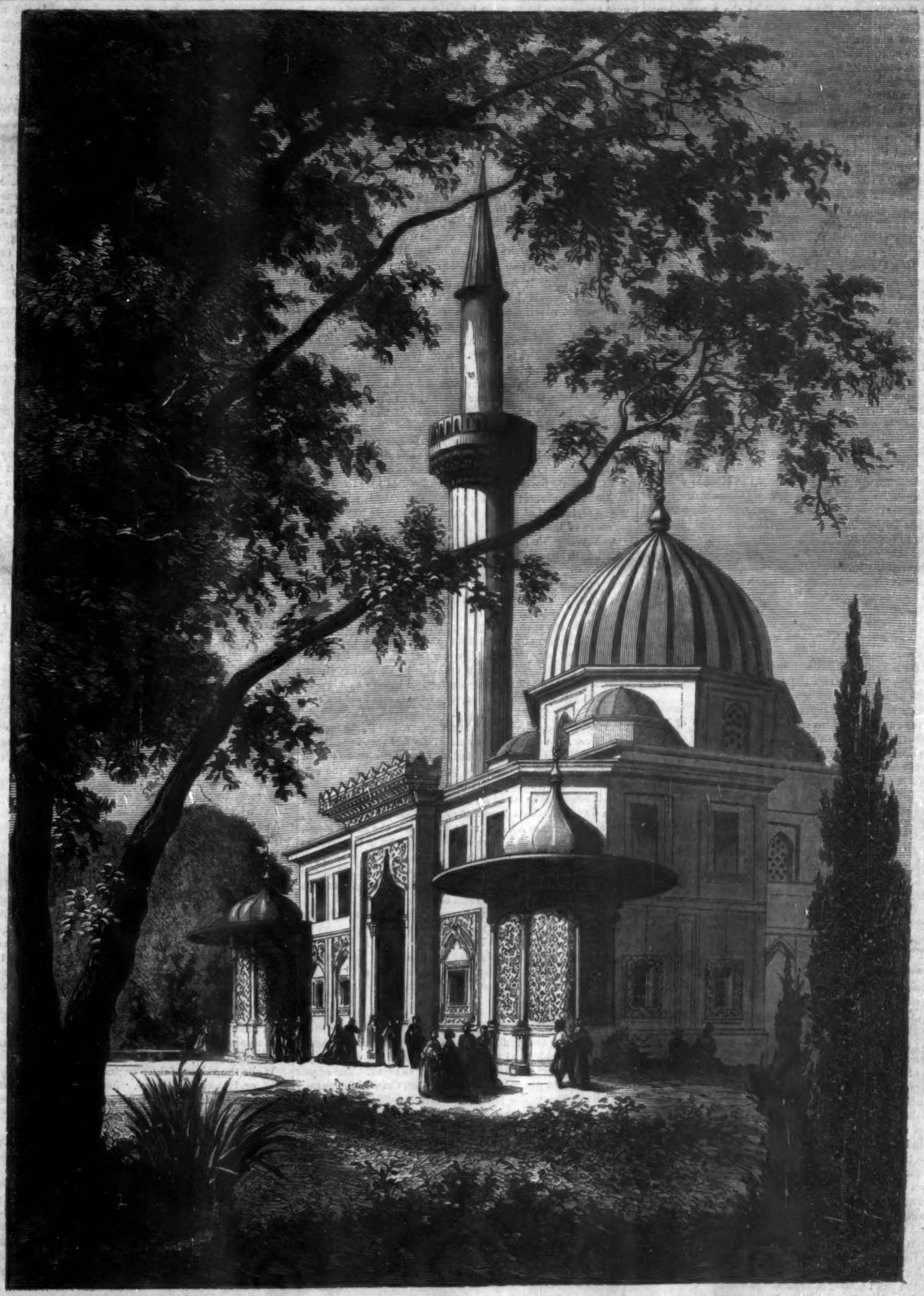


THE TURKISH MOSQUE IN THE PARIS EXPOSITION.—[See Next Page.]

The Mosque in the Champ de Mars, Paris.

On the preceding page is a large engraving of one of the many structures erected in the grounds of the Exposition, representing the peculiarities of architecture of the different nations. This feature of the exhibition is not the least interesting of the grand display. The engraving herewith presented is one of a number we have procured from Paris, representing scenes in the Exhibition, which we shall publish from time to time. We give a translation of the description of the mosque from *L'Exposition Universelle Illustrée*,

The name mosque is derived from the Arab word *mesdchid* (place of prayer), through the intermediate Italian word *moschea*. The most characteristic details of these edifices are the domes that surmount them as well as the towers decorated with crescents at their tops, known as minarets, and from whose hights a crier, the *muezzin*, calls the "faithful" to prayer. The mosques are generally of square form, in front of them there is ordinarily a courtyard furnished with all that is necessary for ablution—which forms such an important part of the worship of Islam. The interior is simply ornamented with arabesques entwined with verses from the Koran. The most rigid Mussulmen utterly proscribe the representation of any object, animate or inanimate, and their priests instruct them that at the last judgment the figures delineated by designers, artists, or sculptors will come and demand of their authors to give them a soul under penalty of perdition. The ground floor of the mosque is covered with carpet and mats; as in Spanish countries one never finds any seats. At the southeastern part of the edifice a pulpit is raised for the priest, and the devout "faithful" should always turn their eyes in the direction of Mecca—which is indicated by a kind of niche. Mussulmen alone may enter the mosque; yet frequently in Turkey, Algiers, and the East Indies this rule is daily infringed, but of course not as often as is ventured on in the *Champ de Mars*.

Adjoining each mosque are a number of charitable establishments, such as schools, hospitals and kitchens for the poor. The expenses of worship and almsgiving are covered by the revenue from real estate that for this object is exempt from taxation.

The mosque of the *Champ de Mars* is simply an imitation on a small scale of the "Green" Mosque of Brusa. All the details of ornamentation have been copied with the most scrupulous care from those of the above named edifice. As to the proportions, they have been rigorously followed from principles adopted for the design of the monument called *Yéchil Turbé*—constructed at the same date as the Mosque of Brusa by the Sultan Mohamed I., one of the Ottoman sovereigns who, following the example of his predecessors Mourad and Bajezet, has largely contributed by his numerous pious endowments to constitute Turkish art—which is much more architectural than ornate.

In conformity with the usual custom, the plan of the Mosque of the Champ de Mars is square. The edifice is surmounted by a dome, supported by lozenge-shaped arches, thus uniting the circular portion to the square base. Preceding the principal hall is a vestibule for the purpose of receiving the shoes of the faithful—for with naked feet alone may they enter the holy place. The pavilion, situated on the right, and at an angle with the façade, contains the fountain (sibil), and in the corresponding one on the left, near the Minaret, are placed clocks to indicate the hours of prayer.

The minaret that surmounts the Mosque of the Champs de Mars gives but a feeble idea of that of the Mosque of Brusa, which towers 220 feet above the city and adjoining country.

In the interior of the principal hall you see the *mihrab*, near which they turn to worship, and the *miraber*, where the priest reads in a loud voice the verses of the Koran. The walls are covered with inscriptions, but can receive no images or other material objects.

The mosques are, in all Oriental countries, supported by the special endowments of private benevolence; consequently they are very varied in their proportions, as well as in the splendor of their ornamentation, thus following the fortunes of their founders.

Correspondence.

The Editors are not responsible for the opinions expressed by their correspondents.

Mississippi Levees—Views of an Old Planter.

MESSRS. EDITORS:—I have noticed in your issue, No. 14, an article on the subject of the Mississippi levees, by Mr. Berry, of Port Gibson. The subject is one that has been considerably agitated of late, in numerous contributions to our local papers; and the discussions were to the address of our citizens who were, by their knowledge of localities, the best judges of their merits. When they contained sound views they were heeded, and, when preposterous or absurd, they were suffered to drift into oblivion. But when a contributor undertakes to enlighten the outside world, through the columns of a distant paper, and one calculated to exercise so much influence as the SCIENTIFIC AMERICAN, it becomes important to refute the errors which he may have committed. His argument is to the address of Congress, before which the question of the construction of levees on the Mississippi will be brought up again, and who will very naturally look for information to such persons as a "thirty years'" resident on the banks of the river, and an owner of lands. I hope, therefore, you will indulge a resident and planter of more than thirty years in stating the conclusions to which he had arrived from actual observations, and to suggest the manner in which the work should be done.

1st, Regarding the outlets to be given to the river above the Balize. The principal one now existing is the Atchafalaya, below the mouth of Red River, which discharges a large volume of water. It has been on the increase for a number of years, and seems to promise in time to take all the waters of Red River. The old inhabitants say that the fords in it have disappeared. The only other one existing is Bayou Lafourche, about two hundred feet wide, by twenty-five feet deep; but the current is not rapid, and it will probably not increase in size on account of its filling up about fifty miles below. The Bayou Plaquemine was about double the size, but it has been stopped up lately, as well as the Manchac, a long time ago. The effect of the stopping up of Bayou Plaquemine was to reclaim from inundation thousands of acres of land of first quality. No doubt it was for a similar object that the Manchac was closed. The opening, if made now, would necessitate leveeing on both sides, a distance of about a hundred miles, to prevent the inundation of a large amount of land now in cultivation. Beside, the effects of such an outlet would be disastrous to some of the best interests of the State, and of New Orleans. It would destroy the fish and oysters from which the city is now supplied; it would change the watering places from salt to fresh water; it would, in a short time, cause a deposit of sand and mud, injuring or preventing the navigation of Lake Pontchartrain, which is now the means of transit of a large trade, and of the products of the forest, such as lumber, pine wood, bricks, sand, tar, rosin, etc.; and all this to economise a few feet of levee. This would be the only possible outlet of the river on the east. On the west it would be equally disastrous, by drowning out the richest portion of the State in sugar lands, and it would be impossible to levee such an outlet, because it would run through an innumerable number of lakes and bayous forming a connected network from the entrance of the Atchafalaya to the sea shore, from fifty to one hundred miles in width.

Mr. Berry takes it for granted that contracting the banks of the river would have the effect of filling up the bed, which would require the levees to be made higher every year, until they would come to the hight of 100 feet, and threaten drear destruction to all the country around. The picture that he draws is perfectly appalling. But I beg leave to differ in opinion with him. It is probable that if the outlets were closed, and the river contracted and kept within its banks by levees, that the water would rise higher; but let us see how much by adding up the amount of the outlets, including Bayou Plaquemine, Bayou Lafourche, 5,000 square feet; Plaquemine, 10,000; the Atchafalaya, 40,000, or an aggregate of 55,000. Supposing the river to average one mile in width, it would be equal to a rise of nine feet (and this is an extreme case that could never occur), can it be doubted that the acceleration in the current would wash out the bottom, and make it deeper, instead of filling it up? An example in point, of the effect of the current in washing out the bottom, is what is seen yearly in Red River. Above Alexandria the river spreads into many lakes and a network of bayous, but at this point the waters are all united into one channel, because of a range of hills here crossing the river and forming what is called a fall. The water here rises to a hight of thirty feet. The rise in the river, as well as the fall, are very sudden, occurring in the space of eight or ten days. After a fall the old bed is filled up by a deposit of coarse sand, so that there is a depth of only two feet of water after the fall; but in a few days the channel is again cut out by the action of the current to a depth of eight or ten feet. I believe this law to be universal in rivers carrying much sand, and I see no reason why it should not apply to the Mississippi. And what is nine feet for the Mississippi when compared to thirty feet for Red River? In the latter is verified the fact that the current is not rapid in the bottom; but would a rise of nine feet in the Mississippi be sufficient to prevent a current in the bottom? But if the rule be that stopping outlets would cause a rise, it must not be taken for granted that the rule will work both ways. If outlets were made additional of equal capacity, it would not cause a fall of nine feet below the actual stage, nor approaching it. I have seen large breaks in the levee of a mile, where there was a high levee, through which the water flowed in a torrent, taking probably one third of the stream; the fall above was not more than from three to five feet a few miles up, and still less below.

But there is no necessity of contracting the banks of the Mississippi. The land is nearly level, with but a slight inclination from the river. Removing the levees further from the banks would be equivalent to an outlet of the same dimensions. And this plan would have a great advantage in this, that in a few years a deposit would take place between the bank of the river and the levee, and in many places I have seen it nearly as high as the levee, thereby diminishing considerably the risk of the levee giving way by the pressure of the water, and facilitating its stoppage in case it should break by accident. I say by accident, because with proper care and diligence a levee ought never to break. The causes of breaking in general are threefold: 1st, Crawfish holes from the water line to the land side, which gradually wash away a large excavation; they should be stopped on the water side. 2d, Washing away by the current when the levee is badly made. 3d, By caving, when made too near the edge where there is deep water. The usual way in which levees are made by contractors and incompetent superintendents is to pile up the dirt with wheel barrows, and for which the pay is so much per cubic yard. Levees made in this way will slide down with their own weight as soon as they are wet; example, what happened this last year for Grand Levee off Pointe Coupee. But the right way is to pack every alternate layer of about one foot in thickness by running over it with a horse and cart or with oxen. A levee made in this way with a proper base (about three feet for every perpendicular foot), is sure to be tight, and will perfectly well resist any pressure of water and the washing of the current, without any brick wall or wooden palisades. The present system requires to be changed radically wherever there is a bend, liable to be washed away or to cave. The levees are now generally too near the water. As for year after year they have been removed further back, it happens that in many places they have come up very close to buildings and valuable improvements, which has been the consideration for not placing them far enough.

It should be observed that in all streams the line of the current is longer than one running in the middle of the stream. The current in leaving a point strikes the bend on the opposite side, a mile or so below, from the next point the next bend, and so on alternately. So that the bends are always cutting away by abrasion, and, consequently, the river tending to get more crooked. This is exemplified in the many cut-offs which take place by a bend cutting a way across a peninsula; and generally the old bed fills up by a deposit of sand.

I know many old levees standing undisturbed for fifty years, not more than three or four feet high, some distance above the city of New Orleans; and actual measurements made at a distance of time of fifty years (the last made by Mr. Ellet, U. S. Survey) show no difference in the width, depth, or hight of the river, notwithstanding all the levees that have been above in that time.

Mr. Berry admits that it is a law of all flowing streams to cut out a channel, but, "in a state of nature," before the water shed is divided by cultivation. This is very true to a certain extent, but very far from being universal. The law does not apply to streams like the Mississippi, the Missouri, and Red River, which flow in valleys of alluvion, where their beds are perpetually changing, not according to any known rule or law, but seemingly by mere caprice. Those streams bear large quantities of sand and mud in flowing through virgin countries where there is no cultivation. He refers to the levee system in Europe, "which demonstrates the fact that levees must be made higher and higher every year, until they will become several hundred feet higher than the original banks of the river!" It would be better to cite localities and examples. I have seen it stated somewhere, but I cannot vouch for the truth of it, and it is the only example that I know, that the bed of the river Po, in Italy, was raised higher than the adjoining lands by the effect of levees. The system there was probably commenced before the time of the Romans, and it happens to be a mountain stream, a perfect torrent, carrying heavy pebbles. Would it be fair to say that the same effects would occur for the Mississippi in our time?

No doubt, before the war, the planters were always in dread behind their levees. Why? Only because they were badly made. Without the war, I have no doubt they would be perfect now. But the work has become impossible by the planters, because they have been impoverished and deprived of the means of controlling labor to effect the work. A work of such magnitude, and essential to the interests of several States, is really a national work, and in justice should be made by the Government, especially when in some instances the levees were destroyed by the Government. I have worked in stopping crevasses or breaks in the levee, where I controlled the labor of six hundred men, above or in the foaming waters, day and night. It could not be done now, for love nor money. I think Mr. Berry's philosophical remedy rather an unfortunate one, *no es ben trovato*, suggesting deep cultivation, two to three feet, to absorb the excess of waters. He does not inform us where this excess of waters will go, except by evaporation; and, for my part, I think they must ultimately go to the river. He does not suppose that all the land is to be cultivated—hills, valleys, swamps, rocks, mountains, and all; from these places the water must certainly go to the river. So that the hope of relief, which he holds forth by rendering the waters of the Mississippi controllable by man, seems an illusion.

As to the question of canals for navigation, in connection with the outlets proposed, they are not wanted. There are natural ones enough, and some to spare; and the railroad is better and cheaper to make.

New Orleans, La. J. C. DELAVIGNE.

Beam Engines Sticking on their Centers.

MESSRS. EDITORS:—In your issue of October 5th, I noticed a quotation from "Engineering," criticising "American Beam" or single cylinder marine engines, with reference to their liability to being caught on their centers; also editorial remarks, closing as follows: "The invention alluded to is intended only for infrequent contingencies."

Being acquainted with the performance of the engines of the Pacific Mail Steamship Company—the finest of this class—as also with the object of the invention alluded to, a few words of explanation may not be out of place.

While the valves of these engines are worked by the eccentrics, or, in technical terms, "hooked on," no assistance is ever required is passing the centers; this is shown by the steamers' logs. But while moving in port, or working at the dock, with the eccentrics unhooked, and the valves worked by hand—so as to stop or reverse on the instant—they are liable to be caught. This danger increases with the size of the engine, or lack of skill on the part of the engineer working the valves. Occasionally there are causes over which the engineer has no control, as in working our ferry boats through ice which obstructs the wheel floats, stopping the engine at the point of least power.

While this invention of Messrs. Vanderbilt & Sims is at hand in any case of emergency, it is more especially designed for use in port, and to push the engine off the center after it has been placed there for adjustment, that being the only point at which the engine can be properly adjusted and "keyed up."

The use of these hydraulic jacks will prevent such serious

accidents as caused a man to have both legs broken on the steamer *Rising Star*, in the latter part of the summer; and another, more recently, to lose his life on the steamboat *Providence*. Both these accidents occurred while in port by prying the engines off the centers with levers in the wheel, as has been the usual custom.

Fear that the term "infrequent contingencies" might cause the owners of our steamers to neglect the safety of their employés, is my apology for having so far trespassed upon your valuable space. Respectfully yours,

New York city. J. W. COLE.

The Water Ram in Pump Pipes.

MESSRS. EDITORS:—It is a well known fact that all pumps that have long suction pipe and from twenty-five to thirty feet to raise the water below the pump, make a snap or jar at each revolution of the pump, and in time wear out or break off the flange of the pipe. But the remedy is not always known, although you may have published it and I not have seen it. The remedy is this: Take an awl or some instrument with which you can punch or drill a small hole in the pipe; go down near the surface of the water you wish to raise, and make a small hole in the pipe; then start the pump, and the water and air will mix and rise in the pipe to the pump together, and of course the water and air mixed, being lighter than the water, will take all the jar out of the pump and pipe. But the pump will not throw so much water. In most cases, however, for supplying water for steam purposes, the pump throws a surplus of water. Also where a pump does not make near a perfect vacuum, by letting in the air it will bring the water. This I have tried where the pump raised the water within five feet of the pump, and it would not come any further till I made a small hole in the pipe near the surface of the water; then the pump threw it in form of foam in sufficient quantity to supply the boiler. How much air to let in I cannot say, nor how far it will hold good, but make at first a very small hole, and keep increasing it till you get the snap out of your pipe and still have water enough. I have been using the above for twenty years, and now use it at my mill when the water is low in the river. JAMES BELL.

Ullin, Ill.

[Your method of preventing the "snap" or water hammer in your pump pipes is rather primitive—not within forty years of the present hydraulic engineering. The proper way to make any pump work is to put on the supply pipe a vacuum chamber of a capacity of double or more that of your chamber. This will not only stop the water hammering but save power, inasmuch as the momentum of the ascending column will be utilized by being stored for the next stroke instead of expending its force in the destruction of the pipes. —[EDS.

The Colors of Soap Bubbles.

MESSRS. EDITORS:—Reading in your valuable paper I noticed an extract from Sir David Brewster regarding the colors of the soap bubble. His theory regarding the mode in which these colors are formed recalled some experiments made by me last fall and substantiate the conclusions then arrived at. The old theory, and the one now taught is, that the colors are formed by the varying thickness of film or body of the bubble. Brewster's theory is, that the colors are formed by the flowing of secretions formed from the bubble itself over the film.

My experiments demonstrate to all appearance this theory. A preparation of oleate of soda carefully prepared was put into solution in pure water and a given percentage of pure glycerin added. Bubbles blown from this solution were very brilliant, and the colors seemed to flow over the film from the part attached to the pipe toward the lower part of the globe in irregular belts and streamers, beginning with the most brilliant hues, and tints, and shadows and gradually fading away as the menstrum ceased flowing, into a deep blue and ending with the bursting of the bubble. The belts or streamers rippled like tiny waves on the surface of a pond and from these ripples seemed to flash out the broken rays of light, changing constantly. The thicker the medium the more brilliant the display.

My attention was called at the time to this fact, but as my experiments were concluded for other ends, I forgot the facts and they were only recalled by the article referred to. I remember remarking at the time that the colors followed the flow of the menstrum from which the bubbles were made from the pipe down to the lower point, where it gathered in small drops and fell off. ALFRED C. POPE.

Binghamton, N. Y.

Gravity, Inertia and Momentum.

MESSRS. EDITORS:—The following ideas of a conflicting nature have suggested themselves. Will you be so good as to throw some light upon the difficulties proposed? It is known that within the surface of the earth the force of gravity varies directly as the distance from the center, hence at the center there is no weight. Let us take the formula,—"Momentum=Quantity of matter into velocity," and examine it in relation to a heavy body, supposed to be let fall into a shaft passing through the earth and its center of gravity. The question, (no matter how the books have settled it), presents many interesting phases. Would the body thus let fall oscillate about the center and gradually come to rest there, or would it come to rest immediately on arriving at the center of gravity?

Putting our formula into a mathematical form we have M=Wt.×V. It is evident that weight at the center of the earth is equal to zero, that is Wt.=0, hence

M=0×V ∴ M=0 ∴ 0=0×V, and hence V=0÷0, which is the symbol of indetermination. It is not clear, therefore, whether V=0, or whether it is equal to some finite quantity.

At the center of the earth, since a body is without weight, how can it have momentum? or how can it have inertia, since the inertia of a body is in proportion to its weight? What reason can be assigned, therefore, for the cessation of motion, if the body have lost its weight, and with its weight consequently its inertia? Or, on the other hand, what reason can be given for the continuance of motion, since it is clearly without both momentum and inertia?

The same logic will apply to a cannon ball shot down into such a shaft. That is its weight becoming zero, its momentum also must become zero, and its inertia gone too, what tendency could there be either to go on, or to stop on arriving at the earth's center?

If the motion should cease at this point what becomes of the initial force given to the ball? If it should continue to go on then it must have weight, momemtum and inertia at the moment it arrives at the center of gravity, a supposition contrary to the facts of the case. A little light upon this singular question will be received with much interest by a reader of the SCIENTIFIC AMERICAN. J. A. S.

Newville, Pa.

[The fallacy of the above consists in using W (weight) in the mathematical formula. It should be M (mass). On the earth mass is measured by gravity but below the surface or far from it the relation is very different.—EDS.

Interesting Facts about the Great Pyramid.

MESSRS. EDITORS:—I noticed in a late number of the SCIENTIFIC AMERICAN a short article on the "Great Pyramid," and some of the remarkable deductions which have been made on its dimensions, ratios of parts, its structure, etc. But what was in that article is but a drop in the bucket compared with the many wonderful and startling facts brought to light and admirably set forth in a work by Prof. C. Piazzi Smyth, Astronomer Royal for Scotland, entitled "Our Inheritance in the Great Pyramid." It is an exceedingly interesting work, and contains some valuable information in regard to British weights and measures. He gives a new system of each, very similar to our present ones but modified and corrected by the standards found in the pyramid. The French unit of measure (the meter) is equal to one ten millionth of a quadrant of the earth's surface. But within the last few years the progress in the science of geology has enabled us to determine "that the earth's equator is not a circle, but a rather irregular curvilinear triangle, so that it has many different equatorial axes, and therefore also different lengths of quadrants in different longitudes."

This you see throws their unit of length in a very unsatisfactory light, making it very empirical and even more arbitrary than our own or the British present standard.

The pyramidal inch is one five hundred millionth of the earth's polar diameter, a length which is invariable, of which there is but one, and consequently no possibility for mistake. There is no possibility, apparent at the present time, of introducing the French system at the time specified by Congress when it is to go into effect, and I hope it never will. It is unhandy, and will always be a source of annoyance to the common workman.

Let us have a system based on plain and already established principles which every one can comprehend, and after we have it, know that we have got that which is correct and will stand the test for ages to come. The English language is the dominant language of the world, and let us have an English system of weights and measures. The change necessary to pass from our present system to the improved one is only to lengthen our present inch 0·00099 of itself, or an amount almost inappreciable except in the nicer and most accurate kinds of mathematical instrument making.

I would advise you to procure the book I speak of and give it a careful reading, and I feel quite certain that you will think much better of the systems proposed there than the much overestimated "French system." I will gladly condense the principal deductions and conclusions arrived at by Prof. Smyth, to be published in the SCIENTIFIC AMERICAN, if you wish it, and let my work go for what it may be worth toward procuring for the noble and honorable working classes of mechanics, farmers, merchants, etc., a simple, reliable, and convenient system of weights and measures. C. B. COLE.

Chester, Ill.

[Probably our correspondent could select and arrange some of the facts to which he refers, so that they would be of interest to our readers.—[EDS.

Lightning Conductors—Their Proper Form.

MESSRS. EDITORS:—Your correspondent "Electron," in No. 15, page 227, current volume, is mistaken when he says that the conducting power of a lightning rod is as the area of the cross section, and the remark that he quotes from a former issue, that a strip is equal to a solid rod of the same surface, is also erroneous.

Electricity of high tension passes on the surface of conductors on account of its self-repulsive tendency, and for the same reason it will pass on the edges of a flat conductor. In the Agricultural Report of the Commissioner of Patents for 1859, there is an article by Professor Joseph Henry, that explains the whole subject. On page 483 there is an experiment illustrated showing that the discharge is by the surface and not by the whole substance; and on page 521 it is explained why a flat form is imperfect. Every departure from the form of a true cylinder is wrong in theory, and it is probably immaterial whether the rod is hollow or solid. If properly made and put up a lightning rod will as certainly carry off the electricity of a thunder storm as a rain conductor will the water. SAMUEL P. GARY.

Oshkosh, Wis.

A Singular Cave.

MESSRS. EDITORS:—I take the liberty of asking you a question; you may answer it if you deem it proper. About four kilometres from the town of Pontgibaud and twenty-two from the city of Clermont in the department of the Puy-de-Dome France, there is a grotto which has been formed by volcanic lava; it is funnel shaped, about six or seven meters wide on the top and two at the bottom and four meters deep; in the bottom there is a little spring running between the lava; in the summer that spring is frozen hard, no water, and in the winter the grotto is filled up with steam, and no ice. The colder the weather the denser the steam. Now can you tell why ice is formed in the summer and steam in the winter? M. A. D.

Wellsboro, Tioga county, Pa.

[We doubt the alleged facts. Speculation is idle till they are authenticated, and more details are given.—EDS.

Cleaning Cider Barrels.

MESSRS. EDITORS:—I see among the questions in your paper the query "how to clean cider barrels." Take lime water and a trace chain and put them in the barrel through the bung hole, first securing a strong twine to the chain to draw it out with. Then shake the barrel about until the chain wears or scours off all mold or pummace remaining in the barrel. Then rinse well with water; after throwing out the rinsing water put in a little whiskey, turning the barrel to bring it in contact with every part and pour out all you can. Your barrel will be sweet. J. McD.

Mamaroneck, N. Y.

Mount Hood.

The hight of this peak of the Rocky Mountain chain has never yet been satisfactorily determined, the latest measurements not being considered sufficiently reliable to settle the controversy which during the last year has been carried on by the California and Oregon papers, with considerable animation. In 1842, Lieutenant, now Rear-Admiral Wilkes, measured the mountain, and called it about 23,000 feet high. Fremont, the next year, made it between 19,000 and 20,000 feet. Those calculations were made by triangulation, and were necessarily imperfect and not much relied upon for strict accuracy. In August of last year Professor Wood, of California, ascended the mountain and reported its hight to be 17,600 feet. This was regarded as the most reliable measurement so far had, and still left it the highest mountain in the United States. As Oregon has the westernmost point of land (Cape Blanco) in the Union, they were also inclined to plume themselves on having the highest mountain peak. But California with its Shasta of 15,000 feet objected to this, and their Professor Whitney declared Mount Hood to be only 12,000 feet. Thus the matter stood till this September, when Lieutenant Williamson, of the Topographical Engineers, United States Army, ascended the mountain, better prepared to measure it, as is supposed, than any of his predecessors. He has not published any report, nor pretended to give the precise hight, but places it about 11,000 feet. In all this scientific conflict the unscientific public are left in as much doubt as ever, and inclined to think that they know as much about the hight of Mount Hood as formerly.

In this connection we copy from an exchange the following graphic account of an ascent of this peak which was made by one of its correspondents:

"Monday morning, at ten minutes after six, we left our camp, armed with pikes, hooks, ropes, and such other things as we thought would lessen the danger and facilitate our journey to the top of the mountain. We carried with us a thermometer cup, spirit lamp, and glass. A ride of an hour, and we stood at the foot an immense snow field that sweeps around the south and west sides of the mountain, extending to the summit. Here we left our horses, and, after lashing ourselves together with a rope fifty feet in length, commenced our march directly toward the summit. As we proceeded, loose crags of rock kept dashing past us and plowing their way through the snow and ice toward the base of the mountain. A toilsome journey of an hour, and we stood on the edge of the crater, from which constantly rises steam and sulphurous vapor, at times making the air difficult to breathe. Here commences the peril of the ascent. We made our way toward the northeast on a narrow ridge of snow, sloping on the right to the foot of the mountain, and on the left into the crater. On this ridge we traveled until we reached a chasm about 600 feet from the summit, varying in width from 5 to 50 feet, and of an unknown depth. Along this we proceeded to the east under a perpendicular wall of ice and snow, in search of a place to cross the chasm, which we found where a snow slide had made a bridge, upon which we crossed.

"The ascent from this point was difficult and dangerous. Instead of snow, we here found ice, making our steps uncertain. The lightness of the air and the burning rays of the sun made it difficult to proceed more than a few feet without rest. Inspired by hope and a determination to succeed, steps were multiplied and hight after hight gained, until ten minutes after eleven o'clock, and five hours after leaving camp, we stood on the summit.

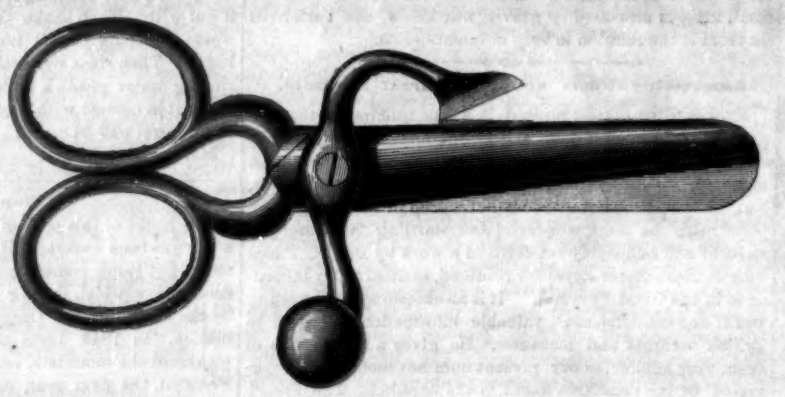
"An attempt to describe the scene is useless. Those who would have an idea of the grandeur and feel the thrill of joy and wonder inspired by the map of nature opened before them, must contemplate the scene from that etherial region. From the mountains in the east the waters of the Columbia come coursing, apparently at our feet, and flow on until lost in the waves of the Pacific. Far off the Coast Range seemed to rise against the sky. On the north Mounts Rainier, St. Helen and Adams stand like massy columns. On the south, and far beyond Mounts Jefferson, the Three Sisters and Diamond Peak, the dense forests fade from sight or seem to blend

with the firmament beyond. Within a few feet of the summit, on a large rock, we found some papers deposited, and among them two copies of the *Pacific Christian Advocate*, dated July 21, 1866, and others dated August 2, 1867. These with some buttons and small pieces of coin, were the only articles found. The papers were well preserved, having no appearance of being damp since deposited.

"A cold wind blew from the east and was disagreeable, the mercury standing almost at zero. Water boiled at 180°, making the hight of the mountain 17,600 feet, at a point 30 feet below the summit. Having completed our observations we began the descent, after being on the mountain one hour and fifteen minutes, and reached camp in two hours, thankful that we had been permitted to stand on those isolated cliffs and view a portion of the works of Him 'who doeth all things well.'".

Improvement in Scissors Combined with Buttonhole Cutter.

The engraving gives a perspective view of a pair of ordinary scissors with a blade for cutting buttonholes. The same rivet connects the two blades of the scissors proper and the buttonhole cutter, the edge of which passes by a piece inserted in one of the blades or impinges on the edge of a portion of the back of the blade prepared for the purpose. This device is actuated by the finger of the operator, the end of the cutting lever being formed into a ball, as in the engraving, which by its weight brings the blade back after being used, or into a ring to be controlled by the finger. While this attachment does not interfere with the ordinary use of the scissors, yet the implement can be readily used to cut the buttonholes in any description of fabric. Its representation is so perfect that no difficulty will be experienced in understanding its construction or operation. It appears to be well adapted to the purposes for which it is intended.



ALTHOUSE'S COMBINED SCISSORS AND BUTTONHOLE CUTTER.

A patent for this was obtained through the Scientific American Patent Agency, Oct. 8, 1867, by J. A. Althouse, of New Harmony, Ind., who will reply to all inquiries relative to the invention.

Science Familiarly Illustrated.

Salts and other Foreign Matter in Water.

Owing to its extensive solvent powers, water is never met with naturally in a state of purity. Rain water, collected after a long continuance of wet weather, approaches nearest to it, but even that always contains atmospheric air, and the gases floating in the air, to the extent of about 2½ cubic inches of air in 100 of water.

Spring water, although it may be perfectly transparent, always contains more or less of saline matter dissolved in it; the nature of these salts will of course vary with the character of the soil through which the water percolates. The most usual saline impurities are carbonate of calcium, common salt, sulphate of calcium, and sulphate and carbonate of magnesium. The waters of the New Red Sandstone are impregnated to a greater or less extent with sulphate of calcium. Most spring waters are charged with a notable proportion of carbonic acid, which dissolves a considerable amount of carbonate of calcium; the calcareous springs in the chalk districts around London contain from 18 to 20 grains of chalk per gallon, 6 or 8 grains of which become separated by exposure of the water to the atmosphere, so that a running stream will seldom contain more than 12 or 14 grains of chalk per gallon in solution. Waters which have filtered through a bed of chalk also often contain carbonate of sodium in considerable quantity, as is the case with the deep-well waters of London.

Mineral waters are impregnated with a large proportion of any one of the above named salts, or with some substance not so commonly met with; such waters are usually reputed to possess medicinal qualities, which vary with the nature of the salt in solution. Many of these springs are of a temperature considerably higher than that of the surface of the earth where they make their appearance. At Carlsbad and Aix-la-Chapelle this temperature varies rrom 160° to 190°. Such hot springs either occur in the vicinity of volcanoes, in which case they generally abound in carbonic acid, as well as in common salt and other salts of sodium; or they spring from great depths in the rocks of the earliest geological periods, and contain chlorides of calcium and magnesium, and almost always traces of sulphureted hydrogen. (Berzelius.)

Many mineral waters contain salts of iron in solution, which impart to them an inky taste; they are then frequently termed chalybeate waters; some of the Cheltenham springs are of this kind. In other instances carbonic acid is very abundant, giving the brisk effervescent character noticed in Seltzer water. Less frequently, as in the Harrowgate water, sulphureted hydrogen is the predominating ingredient, giving the nauseous taste and smell to such sulphureous waters. In other instances the springs are merely saline, and contain purgative salts, like the springs at Epsom, which abound in sulphate of magnesium, and at Cheltenham, where common salt and sulphate of sodium are the predominant constituents. Many of these saline springs also contain small quantities of iodine and bromine, which add greatly to their therapeutic activity.

River water is less fitted for drinking than ordinary spring water, although it often contains a smaller amount of salts; for it usually holds in solution a much larger proportion of organic matter of vegetable origin, derived from the extensive surface of country which has been drained by the stream. If the sewerage of large towns, situated on the banks, be allowed to pass into the stream, it is of course less fit for domestic use. Running water is, however, endowed with a self-purifying power of the highest importance; the continual exposure of fresh surfaces to the action of the atmosphere promotes the oxidation of the organic matter, and if the stream be unpolluted by the influx of the sewerage of a large town, this process is fully adequate to preserve it in a wholesome state. River water almost always requires filtration through sand before it is fit for domestic use; and if water works designed to supply such water be properly constructed, provision is made for this filtration. Suspended matters, such as weeds, fish spawn, leaves, and finely divided silt or mud, are thus removed; but vegetable coloring matter in solution, salts, and other bodies, when once they are dissolved cannot be arrested by such a filter.

In the gradual percolation of water through the porous strata of the earth, many even of these soluble impurities are removed, particularly those of organic origin, partly by adhesion to the surface of the filtering material, but chiefly by a slow oxidation in the pores of the soil.

The magnetic oxide of iron, indeed, seems to exert a peculiar influence in promoting the oxidation of organic matter contained in water which is allowed to percolate through it, and it appears to be probable that this action, to which Mr. Spencer has particularly called attention, may furnish a valuable auxiliary to the methods of filtration at present in use. Filtration through beds of iron turnings has likewise been practiced in some cases with advantages of a similar description, but the oxygen is in this case in great measure absorbed from the water by the iron.

The presence of organic matter in water is easily ascertained by the reducing influence which it exerts upon chloride of silver or of gold, or upon permanganate of potassium, when boiled with them. The chloride of silver becomes purplish; and chloride of gold imparts a brown tint to the water under such circumstances, owing to the precipitation of metallic gold. A very dilute solution of permanganate of potassium is rendered colorless, whilst a brown precipitate of hydrated peroxide of manganese is formed.

Water is familiarly spoken of as hard or soft, according to its action on soap. Those waters which contain compounds of calcium or magnesium occasion a curdling of the soap, as these bodies produce with the fatty acid contained in the soap a substance not soluble in water. Soft waters do not contain these salts, and dissolve the soap without difficulty. Many hard waters become softer by boiling; in such cases the carbonic acid is expelled, and the carbonate and part of the sulphate of calcium which were held in solution are deposited, and cause a fur or incrustation upon the side of the boiler.

Sea water is largely impregnated with common salt, and with chloride of magnesium, to which it owes its saline bitter taste. It might be supposed that the quantity of salts which it contains is continually on the increase, as the sea is the receptacle for all the fixed contents of the rivers discharged into the ocean, since pure water alone evaporates from its surface; but here also there is a return to the surface of the soil provided for in the marine plants, the fish, and their representative guano, which are perpetually being raised from its depths by the force of storms, by predatory birds, and by the industry of man. The specific gravity of sea water is subject to trifling variations, according to the part of the globe from which it is taken. The waters of the Baltic and of the Black Sea are less salt than the average, while those of the Mediterranean are more so. The waters of the Mediterranean in the Levant are more salt than those of the same sea near the Straits of Gibraltar. The mean specific gravity of sea water is 1·027, and the quantity of salts ranges from 3·5 to 4 per cent.

Tyrian Purple.

The Tyrians were probably the only people of antiquity who made dyeing their chief occupation, and the staple of their commerce. The opulence of Tyre seems to have proceeded, in a great measure, from the sale of its rich and durable purple. It is unanimously asserted by all writers, that a Tyrian was the inventor of the purple dye, about 1,500 years before the birth of Christ, and that the King of Phœnicia was so captivated with the color, that he made purple one of his principal ornaments, and that, for many centuries after, Tyrian purple became a badge of royalty. So highly prized was this color, that in the time of Augustus, a pound of wool dyed with it, cost at Rome, a sum nearly equal to thirty pounds sterling. The Tyrian purple is now generally believed to have been derived from two different kinds of shell fish, described by Pliny under the names *purpura* and *buccinum*, and was extracted from a small vessel or sac in their throats to the amount of one drop from each animal; but an inferior substance was obtained by crushing the whole substance of the *buccinum*. At first it is a colorless liquid, but by exposure to air and light it assumes successively a citron yellow, green, azure, red, and, in the course of forty-eight hours, a brilliant purple hue. If the liquid be evaporated to dryness soon after being collected, the residue does not become tinged in this manner. These circumstances correspond with the minute description of the manner of catching the purple dye fish given in the work of an eye witness, Eudocia Macrembolitissa, daughter of the Emperor Constantine the Eighth, who lived in the eleventh century. The color is remarkable for its durability. Plutarch observes, in his life of Alexander, that, at the taking of Susa, the Greeks found, in the Royal treasury of Darius, a quantity of purple cloth, of the value of five thousand talents, which still retained its beauty, though it had lain there one hundred and ninety years. This color resists the action even of alkalies, and most acids.

Pliny states that the Tyrians gave the first ground of their purple dye by the unprepared liquor of the *purpura*, and then improved or hightened it by the liquor of the *buccinum*. In this manner they prepared their double-dyed purple—*purpura dibapha*—which was so called, either because it was immersed in two different liquors, or because it was first dyed in the wool and then in the yarn.—*Prof. Dussauce.*

ALUMINUM—ITS PROPERTIES AND USES.

The discovery of this metal dates back only to 1827, when Wöhler, a German chemist succeeded in extracting it from clay. It is a white metal, not like silver, but having a bluish tinge, Its specific gravity is from 2·5 to 2·67 according to its purity. It is considerably lighter than flint glass, being, as seen above, only about two-and-a-half times heavier than water. Bulk for bulk it is four times as light as silver and a little more than quarter the weight of copper. It is nearly as hard as iron, but can be softened by annealing; has great rigidity and tenacity; can be turned, chased, and filed with ease, never clogging the file; and can be drawn into wire as fine as a hair and rolled or beaten into sheets whose thinness can be surpassed only by those from gold or silver.

For mustard and egg spoons it would be an excellent material, as, unlike silver, it it not affected by sulphureted hydrogen or other sulphureted compounds. It retains its luster in the ordinary atmosphere and is not affected by boiling water, diluted sulphuric, or strong nitric acid, which attacks silver, but has no action upon aluminum when cold, and it is not affected when plunged into melted niter, potass, or sulphuret of potassium, a test which even gold or platinum cannot withstand. It is dissolved, however, in muriatic acid and has a powerful attraction for chlorine.

It has been used in France and England for ornamental purposes, as finger rings, brooches, chains, etc. A cup made of it, although very thin, was not indented by falling from the hand to the pavement. These peculiar properties would seem to make it a proper material for light field guns, cuirasses, helmets and coins, but for the cost of extracting it from its earthy base of argil or clay.

When the inventive genius of man has discovered a cheap and rapid process of extracting aluminum we may expect it to assume a much more important position in the useful, as well as the ornamental arts, than it occupies at present. A beautiful compound is now manufactured in France and England composed of aluminum 10 and copper 90 parts. We have seen a paper cutter, the blade and handle made of this, which had a beautiful yellow or deep straw color, was elastic, tough, and of a very fine finish. Its color is more grateful to the eye than gold and its luster brilliant. The earth metals, of which aluminum may be considered the head, will in time become as valuable for use as they are now for ornament or for the purposes of the chemist.

Is an Illustrated Description a Good Advertisement.

This question is most emphatically answered by the experience of the agent of the Hinkley Knitting Machine, Mr. G. E. Harding, who, since the illustration of the machine appeared in the SCIENTIFIC AMERICAN—less than one week ago—has received orders for not less than 1,750 machines, which he states were obtained in consequence of that publication. Perhaps part of this success may be attributed to the undeniable excellence of the machine, but some of it is undoubtedly due to the influence of this paper.

Native Wines at the Exhibition.

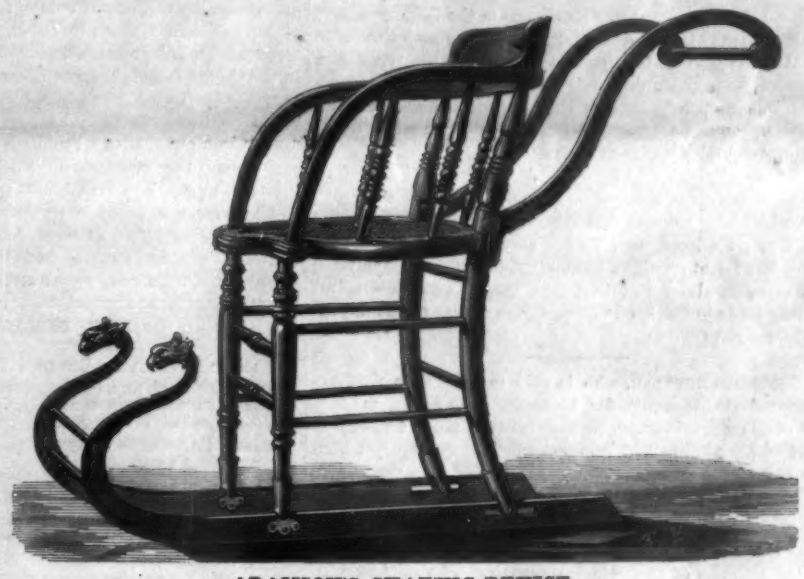
Speer & Co., of Los Angelos, Cal., and 243 Broadway, New York city, exhibited at the Fair of the American Institute a fine collection of specimens of their Catawba, Port, and Sherry wines. Of undoubted purity, manufactured from California grapes, these wines were pronounced by judges fully equal, if not superior to those of authoritative genuineness which are imported under the same name.

"THERE IS NOTHING LIKE LEATHER."—The *Shoe and Leather Reporter* suggests that our government might with profit follow the example of the Walrussians in using a leathern currency, and thus find a valuable substitute for our present torn and defaced promises-to-pay.

An Improved Skating Chair.

The exercise of skating has within a few years become very popular in this latitude, and perhaps deservedly so; at least it is "the rage" during the frozen months, and has partially usurped the place of the old-fashioned sleighing parties as a recreation for out-of-doors. It may be it is too violent for some, and that the practice necessary to perfection entails many a hard knock, and therefore the inventor, whose device is exhibited in the accompanying engraving, has designed a contrivance which shall be an assistance to the skate learner, and a help to those whose age or weakness prohibits the practice of this graceful but laborious art.

As may be seen it consists simply of a pair of magnified skate irons braced together in the form of a cutter or sled, and provided with devices for securing an ordinary chair upon them. The legs of the chair rest in pivoted sockets attached to the skate irons, the rear ones being adjustable by means of longitudinal slots in the runners and secured by thumb or other nuts. To the back of the chair is attached a guiding bar supported by arms. This contrivance may be secured in any desirable manner, so as to be detached as required. Of course any fanciful form may be employed to give grace and beauty to the contrivance.



ADAMSON'S SKATING DEVICE.

The advantages of this device are to be seen in the fact that the runners may be either smooth and without engaging edges, as the ordinary sled runners, or may be *bona fide* skate irons, capable of adhering to the glassy surface. For the conveyance of children, feeble persons, or ladies, it may be used either as a drawn sled or a pushed chair, and for those just learning to skate it affords a certain support and guide. For the latter purpose it will be, we think, invaluable, diminishing the risks and adding to the confidence of learners.

The patent is dated March 5, 1867, granted to Alexander Adamson, 506 Ninth street, Washington, D. C., whom address for information. Rights for sale.

Champagne Country.

Robert Tomes, an American resident at Rheims—pronounced Rans—for sometime, has written a very instructive and entertaining book on the champagne growth, manufacture, and trade of that great wine-producing province. And that is not all. He cautions the public against the use of the most popular brands and tells them how to select a good wine, and how to drink it. It is full of useful hints to champagne drinkers. We copy as follows:

"The champagne which explodes the loudest and flows out the frothiest, is like a great many other things in this world of sound and show, by no means the best. It is, in fact, a proof of its inferiority. Good wine absorbs largely the carbonic acid gas generated in the course of its manufacture. In bad wine the gas, instead of being absorbed, accumulates in the vacant space above the liquid, and thus, when the bottle is opened, the cork explodes with great violence, followed by a cataract of froth. When this escapes the wine remains comparatively flat. In good wine, on the other hand, the cork may require a great effort to draw, and when drawn there may be little or no froth, but the liquid will be seen to sparkle full with those minute gems of brightness tossed up and down by the juggling spirit of the ethereal element. The explosive force and effervescence of poor champagne, great as they may be, soon vanish like those of soda water, but the sparkle of good wine will continue, even if uncorked, for twenty-four hours."

The Hoosac Tunnel Disaster.

From the *Troy Times* we gather the following particulars respecting the terrible accident at the central shaft of the Hoosac Tunnel on the 19th of October, which resulted in the loss of thirteen lives.

The central shaft is located at a point equidistant from the two portals of the tunnel, in a valley on the summit of Hoosac mountain and is in the shape of an ellipse, designed primarily to enable the work to be carried on from additional faces in the center of the tunnel, and secondarily, when the great bore is completed, to admit fresh air and light into the work. The distance from the opening of the shaft to the bed of the tunnel below is 1,040 feet, about 700 feet of which have already been sunk. Arranged around the mouth of the shaft were a series of buildings, consisting of an office, machine and blacksmith shop and sawmill, and also tanks wherein naphtha was confined and manufactured into gas for the purpose of illuminating the work below. Timbers, with platforms sixty feet apart, were placed in upright positions around the shaft from top to bottom, and within these a bucket, supported by wire rope, ascended and descended the shaft as occasion required, bringing up the *debris* from below and carrying the operatives up or down as each relief went on or came off duty.

The naphtha gas was introduced on Friday last—the day before the accident—for the first time. The contractors had made, as they supposed, every preparation to guard against any disaster from the ignition of the dangerous material; but on Saturday at 4 o'clock a lighted candle, standing about twenty feet from the tank, communicated a flame to the gaseous substance, and in a moment almost, the tanks, the buildings, and the timbers in the shaft were all on fire. The men at work in the surrounding shafts barely had time to escape with their lives, the engineer making his way out only after his shirt had been burned off his back and his person considerably scorched.

At the time of the accident there were seventeen men at work in the shaft, four of them near the mouth and the remainder in the bottom of the pit. The four escaped—the others were all suffocated. Not the slightest assistance could be rendered them. The men above had to flee for their lives, and the bucket, the only means of escape for those below, was soon burned and fell down the pit. A great and impenetrable sea of fire rose up between them and the earth above. Every one of them must have died a horrible death from suffocation, or if any long survived the calamity they must have been drowned by the vast volume of water which poured down upon them upon the suspension of the pumps and machinery used in keeping the shaft dry.

On Sunday a sailor named Marshall, at the peril of his life, was let down in the shaft, in the hope that possibly some of the men might be alive. At a point six hundred feet down, he was able to see the bottom covered with water to a depth of twenty feet, and hence not the slightest hope for any of the men in the pit.

Of the thirteen killed only three were married. One of them leaves a wife and seven children. The families of the unfortunate men resided in cabins in the vicinity of the accident, and the scenes of mourning which succeeded the catastrophe were of the most agonizing description.

The loss of property and the detention to the work are considerations only second to the loss of life. The machinery at the mouth of the shaft was very valuable, costing thousands of dollars, and was of the most elaborate and perfect description for carrying on the work. The delay at this point in conducting the great enterprise to a successful issue will necessarily be very great.

The History of the Stove.

For an article of such general use, so indispensible in every household, it is astonishing how brief has been the history of stoves. With all of its multiplicity of forms, patterns, and varieties, it is a creation of the present age—a modern convenience—which our grandfathers knew naught of. The Troy *Times* thus relates the history of stoves in general:

"Stoves are comparatively of recent general use, though they were known in this country as early as 1790. In that year a Mr. Pettibone, of Philadelphia, was granted a patent for a stove, which was claimed to be capable of warming houses by pure heated air. Pettibone's stove was soon after put up in the almshouse at Philadelphia, and Drs. James and Chapman, and several members of Congress, gave testimonials of its utility for warming and ventilating churches, courts of justice, hospitals, manufactories, etc. This was probably the first attempt to use stoves, at least in this country. From this time forward for many years, the stove was confined to public places, its use for warming private houses, or for cooking purposes not having been thought of. The long box stove, capable of taking three feet wood, was the only stove our ancestors knew anything about.

Cooking stoves have come in use within the last few years. The first advance toward a cooking stove was making the Franklin stove with an oven; and the first that deserves the name of cooking stove was an oblong affair having an oven running the whole length, the door of which was in front and directly over the door for supplying fuel, and having also a boiler-hole and a boiler on the back part of the top near the pipe. Then a stove similar in arrangement, with swelling or eliptical sides, was made, generally called the nine-plate stove. About the year 1812 cooking stoves were made at Hudson from patterns made by a Mr. Hoxie, who was the first to elevate the fire-box above the bottom. This improvement was patented, and was sustained in suits against parties who in any way elevated fire from the bottom. In Hoxie's cooking stove the fire was made above and upon the oven, and he was the first who made any stove in which the flame was made to descend from the top to the bottom of the oven. In 1815, William T. James, of Lansingburgh, afterward of Troy, made the stove known as the "James' Stove," which not only continued a leading cooking stove for nearly a quarter of a century, but may yet be seen on board of small eastern coasting vessels, where, being cheap and durable, it supplies the place of a caboose. James' stove is probably better known as the "Saddle bags Stove."

"The first heating of houses by flues, from anthracite coal, was accomplishyd by a Professor Johnson, of Philadelphia, about 1825. The Professor succeeded in heating a large house by means of a furnace in a cellar, surrounded by an air chamber of brick work, whence the gaseous products of the combustion were carried through the building, passing through cylindrical drums, on the first and third floor, and out at the top. This mode of warming buildings rapidly grew into favor as our people came to be well acquainted with coal.

The ample supply of wood in the country was for many years in the way of the successful introduction of stoves. This fuel was at every man's door, and houses were all supplied with ample fire-places. The cost of preparing wood for stoves was an item which quite offset any economic advantages they had otherwise. And, besides, the people were loth to give up the cheerful open fire-place for "a little black box in the corner," as the stove was disparagingly called. Even now, the West uses few stoves compared with the East; and Eastern manufactures make stoves adjusted to wood for the Western market, while those for the market of the Central and Middle States are nearly all coal-burners."

Editorial Summary.

SEWING MACHINE STATISTICS.—During the year 1866 Wheeler & Wilson sold upward of 50,000 sewing machines, and during the past five years their sales have averaged twelve thousand machines per annum more than any other company's.

	1863.	1864.	1865.	1866.	Total.
Wheeler & Wilson,	29,778	40,062	39,157	50,132	159,129
Singer,	20,790	29,237	23,917	36,220	110,164
Difference,	8,988	10,825	15,240	13,912	48,965

At the Paris Exhibition the Wheeler & Wilson stood on the roll of merit No. 1, the Singer machine (exhibited by Mr. Callebaut) No. II.

In reference to the highest premium—the Gold Medal recently awarded Wheeler & Wilson at the Paris Exposition—the *Independent* well says: "That modern wonder, the Atlantic cable, seldom flashes messages between the two hemispheres fraught with more pleasing, as well as important intelligence, than was the announcement that a magnificent tribute of merit had been awarded to one of the most enterprising firms—the Wheeler & Wilson Manufacturing Company. This is the only Gold Medal awarded for sewing machines and buttonhole machines. There were eighty-two competitors. That which has long been claimed by the Wheeler & Wilson Company, and which those who are acquainted with the superior qualities of the sewing machines have never hesitated to acknowledge as a rightful claim, must now be universally conceded—namely, that the Wheeler & Wilson machines are *par excellence* the most desirable. To the perfecters of these machines their reward is in truth well deserved."—*Express.*

EXPERIMENTING WITH THE CHASSEPOT GUN.—Dr. Sarazin, of Strasbourg, placed five dead bodies, one behind another, at certain distances apart, as targets in firing one of these guns. The result was that the hole made by the ball as it entered the corpse was exactly the size of the projectile, while the orifice made by the ball as it passed out of the body was from seven to thirteen times larger than the bullet. The arteries, veins, and muscles were literally reduced to a sort of pulp. The bones were crushed to an immense extent all over the body, and the ball after accomplishing these results pierced a two-inch board, finally lodging in the wall behind.

THE EXPENSE OF DAILY PAPERS.—The *Evening Gazette* informs its readers that the editorial, reporter, and correspondent staff on the *New York Herald* number more than two hundred persons, that the sum paid Thos. W. King on his return from his around-the-world voyage was $5,000 in gold, and that only ten of his letters were ever published, making the cost of each letter $500 in gold. During the war Messrs. Richardson and Browne, while acting as correspondents to the *Tribune*, were captured and for some time imprisoned. They received $3,500 each on their release, and for which they wrote about three columns, costing the Tribune Association about $1,200 currency per column.

UNIFORMITY OF SHAPE IN WEIGHTS.—Pending the adoption of some uniform system of weights, M. Sequier has suggested the adoption of uniformity of form, which will cause the different weights to be easily recognised by the eye, from their sizes. A cylinder, the hight of which is half the diameter, he thinks will be found the most convenient form for the smaller weights, but the larger should be made of cast iron with a hemispherical depression at one end, through which is carried a round bar for the hand to grasp. A groove on the upper surface can be filled with lead for adjustment of the weight.

Two slight shocks of earthquakes were felt in Malta on Thursday and Friday, the 20th and 21st ult.

AN ANALYSIS OF FOOD.—It is stated that a hungry man who sits down before a pound of beefsteak, tender, juicy, and an inch thick, and eats it, will find upon analysis that 65 per cent of his steak was water; that 18 per cent will go to give him an aldermanic fleshness; and that 14 per cent is assigned to warm him, and make him feel comfortable on a cold day. Of the flesh-forming ingredients, according to Dr. Playfair, every one, on an average, requires 92 pounds annually to keep up a proper bodily condition. If it is not obtained from steaks, then it must be secured from something else. Cheese is a great flesh former (30 per cent), and, taken with beer, speedily conceals all traces of unsightly bones. Two ounces of flesh formers per diem will keep a man alive if he is not forced to labor, but hard labor requires six, or the body will run short of starch and sugar, and go behindhand in health and strength. In 100 parts of wheat there are 10 pounds of flesh, but there is nearly double the amount in the same quantity of oatmeal.—*Philadelphia Ledger.*

KILLING THE CHOLERA BY ARTILLERY.—It is a well known fact that the presence of ozone is fatal to the existence of cholera. Telegraph operators are rarely attacked with this disease for this reason, and the accumulation of atmospheric electricity during thunder showers exerts a salutary influence in infected districts. Depending on this fact, Dr. Zantedeschi, of Padua, Italy, has proposed a plan for the destruction of the poison of cholera, by the explosion of gunpowder mixed with common salt and the chloride of lime and of sulphur. The Doctor suggests the placing of cannon loaded with the disinfecting mixture on towers or high eminences in the locality where cholera exists, then at every discharge the air would be cleared of its poison by the combustion of the sulphur generated by the sulphurous vapors, and the consequent formation of ozone. Caution must be practiced, by closing doors and windows, as the descending gaseous substances are very irritating if inhaled.

NATIVE SUGAR CANE IN NEVADA.—In the tules along the banks of the Humboldt river, the wild sugar cane grows luxuriantly and abundantly. Though sheltered by the tules from the wind, the surface receives some small breaks, and from them the rich juice exudes and drying in the atmosphere as it comes to the surface, forms along the stalk little balls of sugar which increase in size according to the length of time the wound remains open. The Indian squaws go through the brakes equipped with large grass baskets, and by collecting the sugar balls, obtain their family saccharine supply at their convenience. This wild sugar is superior to sorghum in that it granulates so readily, and it is confidently asserted that the cane will grow in any low lands in the United States.

THE MECHANICAL HORSE, at the Exposition, to which we have already referred, bears no resemblance to his equine namesake, but consists of a box seven feet long and wide enough for a man to saddle, and about five feet high. This body is mounted on five wheels. In a trial before the Emperor, a mile race course was moderately passed over in two minutes, twelve seconds. When at its fastest speed, the distance was made in fifty-eight seconds, and the inventor affirms that nearly its speed could be kept up for four hours. What is the real motive power, is a secret which the inventor has imparted to the Emperor only, and in return for this distinguished confidence, the inventor has been decorated with the Cross of the Legion of Honor.

THE CAEN STONE OF FRANCE has a rival in the stratified limestone which underlies the whole of the high prairie land of Kansas. A correspondent describes it as white, cream colored, pink, yellow, and red, lying horizontally, and requiring no other quarrying than the use of a crowbar to lift it in blocks from its bed. So easily worked is it that he has seen it hewn into shape with a common wood-ax, and mortised with a carpenter's chisel as easily and quickly as a pine beam; he has also seen it planed with a jack plane, sawed with a scroll saw into brackets and ornamental door and window caps, and cut with a buzz saw into blocks for street pavements or bricks of any size. The material hardens on exposure to air, and becomes as impenetrable as Tennessee marble.

MASTIC CEMENTS.—Böttger has recently published some account of these cements, and states that they are mixtures of one hundred parts of sand, limestone, and litharge, with seven parts of linseed oil. These ingredients carefully mixed and well worked together will have the consistency of moist sand, and at first but little coherence. When pressed, however, the mixture gradually acquires the hardness of ordinary sandstone, and in six months time will emit sparks when struck with steel. The binding agents in such cements are the litharge and oil, the sand giving the body, and limestone or chalk filling up the interstices.

PYROTECHNICS FOR THE SAVAGES.—The Magnesium Metal Company, of London, have received an order for the manufacture of 50-lbs. weight of magnesium to be used for signaling purposes in the Abyssinian expedition. The metal will be burnt as a powder and mixed with resin and lycopodium, the light being produced at will by blowing, by means of a pair of bellows, a portion of the compound through a flame.

EXHIBITORS of articles, at the Paris Exposition, will have one month, or until the first day of December, to pack up and remove their products. All articles not removed by that date will be transferred by authority to the public stores of Paris, at the risk and expense of the exhibitors, and if not called for by the 30th of June, 1868, will be sold and the net proceeds applied to charities.

ARTIFICIAL OIL OF BITTER ALMONDS is manufactured from the benzine of coal tar. A fine stream of benzine and another of smoking nitric acid are allowed to run together in a worm kept well cooled. The liquids react on each other on coming in contact, heat is disengaged, and the artificial oil collected at the end of the worm is first washed with water, then with a solution of carbonate of soda, and lastly, again with water.

SULPHURIC ACID IN LIVING MOLLUSCA.—At the last meeting of the Academy of Sciences, M. Dumas communicated a curious note by which M. de Luca determined, in the liquid contained in living mollusca the presence of a thirtieth part, or about three per cent of pure sulphuric acid; and stated, furthermore, that the same mollusca, plunged in water, disengages a considerable quantity of carbonic acid.

A NEW LUBRICANT.—From specimens of the Chinese tallow tree transplanted into Northern India, Dr. Jameson has made several hundred weight of grease, and has forwarded on trial a portion of it to the Punjaub railway to have its qualities tested as a lubricant. The grease thus obtained forms an excellent tallow, and burns with a clear, brilliant, and white light, emitting no unpleasant odor or smoke.

MUNICH boasts of possessing the largest bronze statue in the world. The colossal figure represents the protectress of Bavaria, with a huge lion by her side. The hight of the figure is 63 feet; weight 230,000 pounds. It stands on a granite pedestal 30 feet in hight, through which a spiral stairway leads to the head of the figure where are seats provided for eight persons.

A GENEROUS BURGLAR, who is said to have been recently transported to Australia for breaking open a safe, made a draft of a model safe which he believes thief-proof, and sent it to one of his victims as a compensation for the injury which he had inflicted upon him.

Minerals of the Pacific Coast.

One of our California exchanges thus speaks of the unexampled richness of the mineral resources of the American States on the Pacific:—

"The variety as well as the richness of the mineral resources of the American States on the Pacific appear to be without example. No other district of equal extent can boast the possession of such an abundance and multitude of valuable metals. The colony of Victoria, in Australia, for a short time surpassed California in the production of gold, but our State has resumed its supremacy. As a gold mining country we are in advance of any other State of either the past or the present. Brazil and Spain may have had places of equal richness and extent, but the laborers were not so skillful, nor the production so large; and their diggings are apparently exhausted, while ours are still turning out millions every month.

"In silver, Nevada is not the equal of Mexico, but it is superior to any State of Mexico, and the Virginia district produces annually more silver than any other district does now, or ever did produce. Neither Guanajuato, Zacatecas, Cerro Pasco, Potosi, nor Chanarcillo can show a yield of $12,000,000 a year; and in their best days that figure was never reached by any of them. All those districts had a wealth equal to that of the Comstock lode, perhaps greater, but they had not the steam power to hoist, and crush, and amalgamate the ore, and to pump out the water. Many of our silver districts are yet unopened. Kearsarge, Owen River Valley, Coso, Cortez, Toyabe, White Mountain, Montgomery, Excelsior, and dozens of other argentiferous regions have only been seen near the surface. The expense of cutting roads, fighting Indians, proving the extent of the veins, and erecting mills is too much for the prospectors, and years may pass before the necessary capital is obtained. The silver exists in the rocks, and in time it must come out.

"In quicksilver, California is richer than Spain, and our production now considerably exceeds that of any other country. The New Almaden is now yielding, according to published reports, at the rate of 400,000 pounds annually, surpassing old Almaden considerably. Discoveries of ore have been made lately at various points, promising a large addition to the production.

"It is the opinion of many miners that in five years California will be at the head of the copper producing States. Our copper mines are rich, extensive, and numerous. Large lodes, containing ore varying from ten to twenty per cent, are found in not less than a dozen counties, from Del Norte to San Diego—lodes that in England would be worth millions, but now lying idle and almost worthless, simply because of the high cost of freight, the dearness of fuel, or the lack of skilled labor. The Union, which ships about a hundred tuns per day, is one of the best copper mines in the world. If our ores could now be sent from our mines to Swansea for $10 per tun, we could ship 500 tuns every day. Railroads must be built through the copper regions, and they will have a vast influence to stimulate the production.

"Gold, silver, quicksilver, and copper, are the only metals which the coast now yields in any considerable quantity. A little platinum is obtained, and there are rich veins of iron, lead, antimony and tin, in the State, but they are not worked. Of the non-metallic minerals, coal is the most important, and of that the annual production is about 80,000 tuns, all of it from Monte Diablo. The borax lakes, in Lake county, are the richest sources of that mineral known, and the production of refined borax is becoming important. The porcelain clay, of Michigan Bar, is of a very fine and valuable quality. The felspar, of Calaveras is considered equal to any for fine ceramic uses. The plumbago, of Columbia, according to the report of experts, is as good as that of the best English mine, which is opened for only a few days in the year, and is a source of vast profit to its owners. The steatite, or soapstone, of El Dorado, is excellent in quality. Rumor says that marble, as white as that of Carrara, is found in Tuolumne and Chasta counties, and the variegated gray marble of Indian Diggings is unsurpassed in beauty of color and susceptibility of polish. Beautiful alabaster is found in Placer, El Dorado, Los Angeles, and Solano counties. There is a manganese mine on Red Rock. Vast beds of sulphur are found in various parts of the State, and the business of refining it has been established in Lake county. Our deposits of asphaltum are extensive, and large quantities of it are sent to market. Petroleum exists in the rocks from Humboldt to San Diego, and the production is slowly but steadily increasing. An opal mine, near Mokelumne Hill, is regularly worked; and diamonds, emeralds, and rubies have been obtained in the placers. There is alum in Santa Clara county, sulphate of magnesia in Lake county, and crude soda, in vast quantities, in the Colorado and Mohave deserts. Common salt is made from the sea water in considerable quantities in Alameda and Santa Barbara counties. Yellow ochre, sienna, and umber, and an iron ore that can readily be made into Venitian red, are among the resources of California. Numerous other minerals might be added, but they are either found in very small quantities, or little importance is attached to them. The list, however, as we have given it, is surely remarkable for its variety, and mineralogists will seek in vain for its like in any other country of equal area."

NEW PUBLICATIONS.

ATLANTIC MONTHLY. Boston: Ticknor & Fields.

The November number of this popular monthly is just out, fraught as ever with interesting articles by the best of authors. Terms, $4 per annum; sold by all periodical and news dealers.

MODERN PALMISTRY. New York: American News Company, 121 Nassau street.

This is a very curious book, full of illustrations of various shaped hands, which, from the lines denoted thereon, are presumed to indicate extraordinary developments of character, when found delineated in the human hand. The book we have not read, but believers in astrology, and fortune tellers under every disguise, will be interested in it.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

The Amsterdam Canal works consists in the digging a ship canal 213 feet wide, and 18 feet deep to open a communication between Amsterdam and the North Sea, and avoid the circuitous route through the North Holland canal which for many years has formed the only approach to the city navigable by large vessels.

A number of railroad enterprises are now being pushed forward in Connecticut with an earnestness that indicates success. The citizens of Middletown have taken such action as to ensure the building of a road from New Haven to the east bank of the Connecticut at Middletown where it will await the action of the next Legislature for permission to bridge the river when the great air line from New York to Boston, will be speedily completed. The Boston and Erie railroad have secured a union with the Erie railroad by the election of its president, as president of that company, and the guarantee of its, bonds to the amount of $5,000,000. This ought to insure the extension of the line from Waterbury to Newburgh, N. Y., thus developing the resources of Litchfield county. The Connecticut Western road, from Springfield to Collinsville, and thence to the Hudson, is in strong hands and the extension of the Collinsville branch of the Canal road to Lee and North Adams, Mass., is regarded as almost certain.

The whole number of mines in France, is now 1,124 of which 598 are coal mines; 249 iron mines, and 257 mines of other minerals. The production of the coal mines and iron works last year reached the value of 472,000,000 francs.

During September the heading at the East end of Hoosac tunnel was carried forward one hundred and eleven feet, and sixteen hundred and nine cubic yards of rock were excavated from the enlargement at the East end.

At the plumbago mines near Senora, Cal., from twenty to twenty-five tuns are daily prepared ready for market. The remarkable purity of the products commands for it a very high price.

In the Chollar Potosi, Nevada, mines, a rich strike is announced at the depth of eight-hundred and sixty-five feet from the surface. This is the deepest shaft on the Comstock lode and the success in finding rich ore at that depth is thought will be quite encouraging to other companies on the ledge.

The old Greek silver and lead mines of which the historian Xenophon once had the management, and regarding which he has left a memoir or State paper—have lately been brought again to notice from the fact that a French company, at Port Mandri, are diligently smelting down the old scorias, slag and refuse from them, and extracting as much as 30 tuns of metal a day. The work is said to pay well, and the lead goes to England in Newcastle ships which bring out coal for the furnaces. The value of the daily produce of the works averages 15,000 francs and it is calculated that there is a sufficient quantity of scorias between Port Colonna and Port Mandri, to supply the works for fifteen years to come. The yield is between 7 and 12 per cent o good metal.

The new law providing for the wearing of distinguishing uniforms by all persons employed by railway companies in this State, goes into effect on the 22d inst.

Pennsylvania takes the lead among the States, in the annual amount of iron mined; Michigan ranks next, New Jersey, New York, Missouri, Massachusetts, Connecticut, Maryland, New Hampshire, and Ohio, follow in this order. New Hampshire and New Jersey produce mainly the magnetic ores; New York, the magnetic and hematites: Connecticut, hermatites; Pennsylvania and Ohio furnish the argillaceous ores of the coal measures, and Missouri and Michigan mine the compact red and black oxides.

The correspondent of an exchange asserts that the "De Witt Clinton" was the first locomotive built in this country, and in 1831 it ran on the Albany and Schenectady railway. The engine weighed less than five tuns: its cylinders were nearly vertical, were on the outside of the boiler, and the driving wheels were made with light wrought iron spokes. Being so light it required heavy repairs every trip.

The United States commissioners have finished the inspection of a section of the Central Pacific Railroad west of Cisco, carefully examined the grades, culverts, bridges, etc., and pronounce it to be twenty-five per cent better constructed than any portion of the road before accepted. Over the section there are already four miles of roofing, and two and a half additional will be built this fall. The commissioners then commenced the primary inspection of the road two miles east of Cisco, at Coburn Station. The cars are running eight and one half miles east, and construction trains are laying the track at the rate of one and one half miles daily. In thirty days the section will be completed. The intermediate section over the summit will not be completed for transportation purposes until spring, although the company expect to lay the track before winter. By August next the cars will be running to Truckee river, near Crystal Peak, while a considerable portion of the road will be graded towards Humboldt.

The Emperor of Russia has ordered the establishment of a commission charged to inquire into the best means for mining and employing anthracite coal from the rich beds in the territory of the Don Cossacks.

Player's monster furnace at Norton, Eng. produces one tun of foundery iron to one tun of coal, the ores yielding only 30 per cent. The furnace which yields such an enormous amount is 27 feet bosh and 105 feet high. In this country a yield of one tun of iron to two and a half tuns of coal from 50 per cent ores is often considered a good result.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

PUNCHING MACHINE.—J H. Haskell, Baltimore, Md.—This invention relates to a machine for the punching of holes in leather properly fed thereto and the machine is more especially designed for use in connection with the manufacture of hose from leather, and to that class of hose having its edges overlap and joined together by rivets.

CARRIAGE KNOB.—R. D. Case, N. Y. city, and John Barclay, Attleborough Falls, Mass.—This invention relates to a new carriage knob, which is so arranged that the curtain can be fastened or unbuttoned with great facility and dispatch.

FURNACE FOR REDUCING IRON ORE.—Alois Thoma, New York city.—This invention relates to a new apparatus for discharging oxide from iron ore, after the same has been roasted to reduce it in a red heat to metallic iron. The invention consists in such an arrangement of the furnace in which the ore is to be reduced that the desired result can be obtained without bringing the ore in direct contact with the solid fuel, but only with the burning gases arising from the same.

PILE FOR ROLLING BEAMS.—Wyatt W. Miller, Safe Harbor, Pa.—This invention relates to a new method of forming piles from which to roll large double flange beams, such as are used in fire-proof buildings, bridges etc.

FURNACES.—Henning Boetius, Hanover, Prussia.—This invention relates to a novel construction of furnaces, to be used in the manufacture of glass, iron steel and other material as well as for all purposes where heat is to be reduced. The invention consists in the use of flues, which are arranged on the outside of the walls of the fire places, and connect with channels or air passages, arranged above the fire chamber, said flues being provided with valves or gates, to regulate the quantity of the air passing through the same.

MOWING MACHINE.—M. A. Keller, Littlestown, Pa.—This invention consists in the novel and peculiar arrangement and employment of levers for raising and lowering the cutter bar of a mowing machine.

KILN FOR ROASTING IRON ORE.—Alois Thoma, New York City.—This invention relates to a new process for roasting iron ore, said process being particularly applicable to the treatment of magnetic iron ore, which is found in large quantities throughout the United States. The object of the invention is to reduce the expense of the process, and to so arrange the kiln and the whole process, that the roasting may be done with the use of brown coal, wood, or even peat, while heretofore only the expensive anthracite coal could be used for the purpose.

FURNACE FOR SMELTING ORE.—Alois Thoma, New York City.—This invention relates to a new smelting furnace for preparing washed and reduced iron ore for use, and for separating the metal contained therein from the earthy and foreign substances.

FURNACE FOR SMELTING STEEL.—Alois Thoma, New York City.—This invention relates to a new furnace for smelting steel and for producing cast steel of the best quality from steel of ordinary or inferior kind.

HOISTING APPARATUS.—Roger Finnegan, New York City.—This invention relates to a new manner of operating a hoisting apparatus and consists in arranging a pair of oscillating clamps which are fitted around the endless rope by which the drum is revolved and which can be set in motion by oscillating a horizontal axle.

CARRIAGE KNOB.—J. Barclay, Attleborough, Mass.—This invention relates to a new carriage knob which is so arranged that the spring jaws by which the curtain is held are made detachable from the pins by which they are secured to the cam eye so that when either part is destroyed or broken it can be replaced without loosing the other part.

SELF-ACTING PORTABLE FOUNTAIN.—John Hegarty, Jersey City, N. J.—This invention relates to a fountain for propelling common or scented water which can be placed into any room and be removed with ease and will be constantly working, only requiring the occasional winding up of a spring.

STEAM RADIATOR FOR HATTERS' KETTLES.—John S. Rice, Newark, N. J.—This invention relates to a new device for heating the water in a hatter's kettle and consists in the use of a drum or cylinder inserted within the kettle and of a steam pipe inserted within the cylinder. Both the cylinder and the steam pipe are perforated, the holes in the cylinder being much finer than those in the pipe so that the steam which is conducted into the cylinder through the holes in the pipe, enters the water in very fine streams, and is distributed uniformly to all parts of the water in the kettle.

WRENCH.—B. S. Lawson, Brooklyn, E. D., N. Y.—This invention relates to a wrench which is of very simple construction and of great strength and which can be easily adjusted to work of different kinds.

SODA WATER FOUNTAIN.—William Gee, New York city.—This invention relates to a new and improved mode of lining the cast iron soda-water fountains and retorts, in order to prevent them being acted upon or eroded by their contents.

PLOW.—J. E. Jinkins, Milton, Fla.—This invention relates to a new and useful improvement in the construction of plows, whereby the same may, with the greatest facility, be made to penetrate the earth at a greater or less depth, and the plow also adapted for scraping or surface culture when required.

METHOD OF PROTECTING HEATED SURFACES.—Edward G. Scovel, St Johns, N. B.—This invention consists in protecting surfaces exposed to heat, in furnaces, by the circulation of water, the circulation being produced by the heat of the furnace.

COAL GRATE.—W. T. Foster, Jeffersonville, Ind.—This invention consists in providing an adjustable cowl or ash fly for the ordinary fire grate, and for other fireplaces.

HORSE HAY FORK.—Jacob H. Hendrick, Dexter, Mich.—This invention has for its object to furnish an improved horse hay fork, simple and strong in construction, easily operated, and effective in operation.

INVALID BEDSTEAD.—C. S. Baker, Winchester, N. H.—This invention has for its object to improve the construction of the invalid bedstead patented March 27, 1866, Warren S. Hill, inventor, so as to make it simpler and less expensive in construction, and more efficient in operation.

BUCKLE.—Lawrence Rhoades, Newport, R. I.—This invention relates to an improvement in buckles, and consists in hanging a second or supplementary loop, within the ordinary loop, whereby the ordinary prong is dispensed with and consequent injury to the material avoided.

HAY FORK.—L. H. Tears, Elkland, Pa.—The hay fork embraced in this invention consists of two hooks separated by a plate, pointed or dart-shaped at one end, all of which are hung to a common center pin, with the two hooks so connected to a common bell-crank lever, to which a rope is hung, that by pulling such rope, both hooks will be simultaneously drawn in, or in other words, released from the hay hung therein.

PUMP.—A. Jusberg, Galva, Ill.—The improvements in pumps embraced in this invention can be applied to either single or double-action pumps, and they consist, principally, in so arranging the several valves and the communicating passages with inlet and outlet to the piston or plunger cylinder of the pump that the water or other liquid will be drawn into the same, both in the downward and upward movement of the plunger, so that, as it is discharging before the plunger in either case, whether moving up or down, it is receiving behind or back of the plunger, whereby, even with a single plunger, or piston, and barrel or cylinder, a continuous stream or discharge of water is secured.

CORD STRETCHER AND SUPPORTER.—E. White, Decatur, Ill.—This invention consists in providing a windlass which is operated by a crank, in a suitable frame, and also in a supporter whereby the cable or rope is held in a horizontal position, while it is being stretched.

MACHINE FOR CUTTING CHEESE AND OTHER ARTICLES.—William Rhodes, Jr., and Tiras Gerhard, Reading, Pa.—This invention consists in operating a cutting knife by a rack and pinion, and also in revolving a table by means of gearing, in connection with the knife.

SELF-SUPPORTING WHEEL.—Wm. F. Sawyer, Mobile, Ala.—In connection with the spokes, which are secured to the hub by mortise and tenon, in customary manner, are employed supplemental or supporting spokes, which have their inner ends confined within a circumferential groove on the hub, and between the tenoned spokes, in such a manner as to greatly add to the strength of the wheel without weakening the hub by additional mortises.

SAFETY STIRRUP.—Wm. Weddington, Alexandria, Ind.—This invention relates to an improvement in the construction of a saddle stirrup, and consists in attaching a foot piece to an ordinary stirrup, with pivots, in such a manner that the weight of the foot on the heel of the foot-piece shall tip it up, or raise it between the bars of the stirrup, and thus release the foot in case of accident by the throwing of the rider.

HAND SPINNING MACHINE.—James M. Hart, Des Moines Iowa.—This invention relates to a new and useful improvement in the construction of a machine for spinning wool or cotton yarns or thread, the object of which is to spin by hand a number of threads at a time, instead of a single thread, as with the common domestic spinning wheel.

SELF LUBRICATOR FOR VALVES.—Simon H. Badger, Erie, Pa.—This invention relates to a new and improved self-lubricator, designed for lubricating, during the working of the engine, the surfaces of steam valves and valve seats of locomotive and other slide valves, and the pistons working in the steam cylinders adjacent to the valves.

PAWL AND RATCHET CONNECTION FOR MOWERS AND REAPERS.—John D. Wilber, Poughkeepsie, N. Y.—This invention relates to a new and improved pawl and rachet connection for reaping and mowing machines, and it consists in using a plurality of pawls, three being a desirable number, fitted in sockets attached to the axle, and enclosed within a hollow ratchet, placed loosely on the axle, and having a pinion connected to it which gears into a toothed segment on the driving wheel; all being so arranged that the pawls are made to engage with the ratchet without the aid of a spring, or springs, and a connection formed between the axle and driving wheels, when the machine is drawn forward so as to communicate motion to the sickle and other working parts, and no connection formed between the driving wheels and the axle when the machine is backed.

MACHINE FOR SLICING AND CORING APPLES.—G. C. Wright, LeRoy, O.—This invention relates to an improvement in the character of a machine for slicing and coring apples, and consists in a slicer, or cutter, having a central, tubular core-cutter, with a series of radial knives set around it, to slice an apple in segments, by means of a follower brought down upon it with a lever.

HORSESHOE.—Silas Sloat, Morgan, Ohio.—This invention relates to a new and improved horseshoe, and it consists in constructing the same with a view to its ready attachment to and detachment from the hoof, and to accomplish this end without the employment of nails. The object of the invention is to obtain a means whereby any person of ordinary ability may apply a shoe to the hoof of a horse and detach it therefrom, without the aid of a shoer or smith, and also obtain a shoe which may be applied to diseased and defected hoofs, without injuring the same.

TELEGRAPH INSULATOR.—John L. Waite, Burlington, Iowa.—In this insulator, which may be termed, a double or compound insulator, as in itself it combines two separate insulators as heretofore used, two distinct lines or means of insulation are employed, the one through the shank by which the insulator is secured to the telegraph pole or other place, and the other through the imbedment of the hook of the insulator on which the telegraph wire is hung or secured, within any suitable insulating substance, such as brimstone, gutta percha, white lead, hardened coal tar, etc.

HORSESHOE.—J. Wilson Hodges, Baltimore, Md.—The object of this invention is to provide a secure and cheap method of securing roughing calks to horseshoes, and at the same time avoid the employment of the screw in so doing.

ANIMAL TRAP.—C. S. Trevitt, Washington, D. C.—This invention relates to that class of traps in which the animal steps on a trap door in his effort to secure the bait, and by endeavoring to get the bait springs the trap and is precipitated into the chamber below. The invention consists in a new method of setting the trap door and securing the bait, and in a new device for adjusting the door to animals of different weights.

WATCHMAKERS' TOOL.—John M. Cayce, Franklin, Tenn.—This instrument is designed for rectifying and reshaping the cogs of watch wheels, in order to make the gearing run better, and for other purposes.

COMBINED LOCK AND LATCH.—Monroe B. Foote, New England Village, Mass.—This invention consists in combining the common spring door latch with, a lock situated inside of the latch case in a slot in the latch bolt, into one side of which its shot bolt locks.

PUMP.—Frederick Bauschthiker and Barnet Van Fleet, Washington, D. C.—This invention consists in a new valve which clears itself of gravel and other obstructions, and a new box which works more easily and with less liability to injury than those hitherto in use.

ANIMAL TRAP.—Joseph Trainer, Rural Dale, Ohio.—In this invention the trap is constructed with two chambers, in escaping from one to the other of which the animal sets the trap by a novel, simple, and effective apparatus.

BAKING PANS.—G. W. Mitchell, M. D., New York City. Patented Oct. 15, 1867.—This invention relates to a novel constructed baking pan, for the baking of cake, rolls, etc., and the invention consists in making the pan in two parts or pieces, one of which, or the bottom, is made of cast iron of a suitable thickness, with a series of separate and distinct circular or other desired shaped cavities or depressions therein, between which cavities in and through the thickness of the bottom are a series of holes, at suitable distances or spaces apart, and the other or upper part is made of sheet, cast, or other metal, of suitable thickness, with cavities or depressions, and of such a shape and size as to fit within the cavities of the cast iron bottom, resting therein as well as upon its upper surface.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at 50 cents a line, under the head of "Business and Personal."

☞ *All reference to back numbers should be by volume and page.*

J. P., of Mass.—In accrediting the agency of Bourne's "Treatise on the Screw Propeller" in No. 17, current volume, an error occurred. John Wiley & Son, 535 Broadway, New York city, are the agents for the work for this country. By sending to them you may get all the numbers complete. We regard it as the best work on this subject we have yet seen.

W. C. A., of N. Y.—The colors of glass are produced by metallic oxides. Gold gives the rich red seen in Bohemian glass ware, and this is one reason of its high cost. It furnishes, in combination with tin, the finest rose and purple. Oxides of iron and of chrome produce reds, browns, and black; the latter is also obtained from manganese and cobalt. Oxides of uranium, chrome, antimony, and iron yield orange; chrome and copper green, and cobalt and zinc blue.

P. S. Y., of Mass.—We think the discussion relative to the formation and material of the tails of comets has received, for the present, sufficient attention in our columns. We must, therefore, respectfully decline your otherwise interesting article. This answer will also apply to the communication of J. S., of Md., and others.

J. H. M., of Wis., sends us samples of ferruginous earth which are ochers, worth from $5 to $10 per ton.

E. M., of Pa.—This correspondent sends us a specimen of soft copper wire, gage about 20 or perhaps 24, and asks how many feet of wire like it will be required to give strong shocks from a single Daniells' element, copper surface 96 square inches, whether collodion or shellac varnish, or cotton is best for insulation, and what material to use for molds in which to cast zinc cylinders. In reply we would say that 200 or 300 feet of the wire in an induction helix will give powerful shocks. Collodion and shellac have been used for insulating wire, but cotton is perfect enough for ordinary purposes. Good molding sand is as good a substance as we know of in which to cast the zinc cylinders for a battery.

G. E. W., of R. I., asks how a very white enamel can be secured to wood in the shape of small knobs, in imitation of white porcelain. The best way we know is by the use of screws cemented into the enamel. Melted shellac might answer for thin, broad pieces. Perhaps some of our correspondents can reply more definitely.

J. H. K., of N. Y.—"What number of emery is required for a scouring belt for fellies." This is a question easily determined by cheap experiment. Much depends on the state in which the fellies of a wheel leave the saw. If properly sawed No. 12 emery is what is needed.

J. H. L., of N. Y.—Pure steam is invisible; *side* the "glass blowers'" steam engine with boiler and engine of glass. Hish or pure steam will *not* burn the hand. You are mistaken in supposing it will. Steam does not burn nor scald until it is mixed with the atmosphere. The vapor seen discharging from the exhaust pipe of a high-pressure engine is not the pure steam used in an engine cylinder.

B. W. H., of Mass., thinks that our reply to "J. P. J., of Pa.," in No. 17, current volume, is incorrect in the statement that Wm. Mason, of Taunton, Mass., improved the locomotive truck or "bogie" by spreading the axles and bringing the center of the cylinder on a level with the center of the driving wheels. He says, "both the spread truck and level cylinder were made by other builders before he ever commenced or turned out an engine." This may be so, but until B. W. H. gives us facts instead of assertions our statement is as valuable as his.

R. S., of Vt.—"How can I treat paper to have it possess the largest degree of flexibility and still retain its whiteness and texture?" In its manufacture use good stock and omit the sizing.

——, of Iowa.—We have little faith in the claims of venders of gasoline and similar oils that they are not explosive. Kerosene if properly distilled is preferable, and even kerosene is not always safe.

W. S. B., of Ill.—"What is the difference in power required to raise a column of water twenty feet between a common suction and a force pump, the pistons or valves being of the same capacity?" There is no theoretical difference, and if the pumps work with equal friction there will be no practical difference. In one case fifteen pounds to the square inch—the atmospheric pressure—lifts the water, and in the other a mechanical power equal to that pressure does the work.

J. W. W., of Mass.—"How many pounds pressure to the square inch would, in your opinion, be safe on a flue boiler 18 feet long, 4 diameter, built by Tufts at East Boston? It has been in almost constant use for 10 years." Your data are somewhat indefinite, as the thickness of the iron, either of the shell or flues, is not given, nor the diameter of the flues. The age of the boiler suggests fears of its reliability. It should be inspected by an expert and tested by hydraulic pressure to 30 per cent above the steam pressure. Second-hand boilers are too often treacherous. Always in purchasing, the opinion of a good engineer, based on personal inspection, should be taken.

B. D. T., of N. Y., asks if oil will injure rubber, or if rubber kept continually in oil will lose any of its good qualities. We reply that oils, especially animal oils, are ruinous to rubber in any form.

W. A. C., of Goshen.—This correspondent does not give the State in which Goshen is situated, while, as post stations, there are no less than fourteen, scattered through the States of Maryland, Georgia, Indiana Massachusetts, New Hampshire, New York, Ohio, Kentucky, New Jersey, Tennessee, Texas, and Missouri. This is only one specimen of careless writing we receive every week. Sometimes we place such communications on our "dead letter" file, and sometimes cast them into our waste basket. But, to his request: This is, "what would be the result if I should carry my steam pipe down along side my boiler outside the wall, and pass it under the boiler back of the first bridge of the furnace, to be exposed to the heat of the fire, thence to the fire. Would the pipe burn when the steam was shut off from the engine, etc.?" Better have plenty of steam space to yield dry steam, and not attempt with your knowledge of engineering, to superheat your steam by any such process. We have replied to a similar inquiry before.

W. T. J., of Pa.—The ordinary method of giving iron castings a bronze appearance is by dipping them in a solution of sulphate of copper.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

Inventors and Manufacturers of Labor-saving Machinery, Articles useful in the Household, the Workshop, or on the Farm, will find it to their interest to send circulars to, or correspond with, "The Texas Labor-Saving Machinery Agency," P. O. Box 244, Houston, Texas.

A Rare Chance is offered to an Energetic Business Man, (no other need apply,) to obtain an undivided one-half interest in the a popular patent. Price $3,000. Full particulars upon application to W. M. Baker Fortville, Hancock county, Ind.

W. N. Hayes, Athens, Ala., wishes to correspond with Manufacturers of Brick Machines, and tools for boring Artesian Wells.

Wanted—a large Condensing Air-pump. Makers or Owners please address D. B. Tanger, Bellefontaine, Ohio.

T. M. Cobb, Beloit Wisconsin, wants the best Press for Baling Straw.

Send to P. O. Box 706, Oil City, Pa., Prices and Description of good yet low priced mills for grinding feed for horses, cattle, and hogs.

Makers of Pill Machines suitable for manufacturing Pills in large quantities, address John A. Hoy, Wellsborough, Tioga Co., Pa.

Eureka Band Saws, manufactured by Welch, Harrison & Co., corner Second and E. sts., South Boston, Mass. The best Band Saw in the market. Send for circular.

Parties having Hickory Timber for sale will please address, with particulars, J. I. Blauvelt & Co., Paskack, Bergen Co., N. J.

Manufacturers of Pump Augers will please send descriptive circulars and prices to Drawer No. 58, Ann Arbor, Mich.

Rob't Cravath, Saratoga, Winona county, Minn., wishes to know the cost of the cheapest Hay Press that will press two or three tons per diem (two men working it), to be delivered at St. Paul, Minn.

Lamp Manufacturers—New Invention.—For sale cheap. Entirely new idea. L. G. Grady, Halifax, N. C.

Can anybody tell us where we can find one of J. D. Chism's Shingle Cutters? Munn & Co.

Wanted—a machine invented, the friction to be overcome by difference in weights of bodies passing down out of, and up under water C. H. B., Troy, N. Y.

Improved Horse Hay Rake.

Unlike most hay rakes this is not revolving, the teeth—of which there are but one set—being always presented to the hay or grain to be gathered. It is a device intended for carrying the hay to a stack, as well as for raking it, and obviates the necessity for cocking it. The rake teeth and head are unusually strong, the former connected to the uprights, A, which are strongly framed together by diagonal braces at the top, strengthened by iron braces passing from the top to the uprights, A, and to the ends of the rake head. The rake head is secured to the uprights by metallic straps, which, forming journals for it, permit it to have a slight semi-rotary movement, sufficient to allow the points of the rake teeth to be raised enough to clear an obstruction, which is done by the hand of the operator by means of the rigid frame projecting from the rear of the rake head. To the top of the frame, formed by the uprights, A, and their braces, is secured the tongue, B, which has a plate, its sides turned up to form a socket for its reception. Under this plate is a metallic ring secured to the frame and on this the plate is moved. Pins passing through the tongue and through slots in the turned up sides of the plate on the tongue allow a slight longitudinal movement of the tongue to throw a hook attached to the rear of the tongue into and out of a slot in the rear of the metallic plate. A central pin passes from the tongue through the circular plate so that the draft comes upon the locking hook and the pivot pin.

SWINNERTON'S HORSE HAY RAKE AND GATHERER.

In operation the hay is collected upon the rake and carried to the stack or barn; the horses are then backed or the traces slacked enough to disengage the hook at the rear of the annular plate. The horses are then guided half round in either direction and the machine drawn away from the hay. The team is then turned back one quarter round and started forward, the driver, at the same time, stepping on the rake head nearest the horses, when the machine is ready to collect another load.

The machine is so simple in construction, and so ready in operation that farmers cannot fail to perceive its advantages. A patent was obtained for this device through the Scientific American Patent Agency June 25, 1867, by James F. Swinnerton, of Marion, Ohio. See advertisement on another page.

Railroad Officers to Wear Uniforms—A Step in the Right Direction.

A long-needed reform in railroad management was introduced by the legislature of New York last winter; it was by passing an act compelling the employés of all railroad companies in this State to wear a distinguishing uniform. This law went into operation on the 22d of October, and that date may be set down as an era in travel by rail in this State.

This subject of railroad uniforms is one which has long been agitated, and it has been discussed in all its bearings, both by railroad men and the press; the employés, we believe, always expressing themselves as strongly opposed to the measure.

It seems that, in addition to the fact that innovations are always opposed, no matter how necessary, the employés of railroads looked on the adoption of a uniform as a species of degradation not to be tolerated; they regarded the uniform as a sort of livery, and viewed its adoption as a badge of servitude on a par with the livery of a lackey. It is likely, that if this subject had been straightforwardly put before them, and the vast difference between the livery of a servant and the uniform of an officer been properly explained, this opposition on the part of those most interested—except the traveling public themselves—would have been deprived of its force long ago.

The reasons which explain the necessity of uniforms for officers and privates, in the army or navy, urge with equal force the propriety of its use by men intrusted with such important duties as the officers of a railroad company. Common sense suggests it, and discipline demands it. That the use of a uniform will add as much to the discipline of a railroad as it does to that of any other organization, is a fact which seems to us to be perfectly clear. Let any railroad engineer or conductor ask himself what sort of order could be maintained in a regiment or on board a man-of-war, if "all hands" dressed as they pleased; we think we can answer for him that, instead of order, confusion would be the order of the day.

We do not think, from what we have seen of locomotive engineers—and we have occupied that responsible position—that they are at all afraid of being scrutinized in the performance of their duties when in charge of a train; and it is only on such occasions, as we understand it, that any officer will be required to wear any insignia of his rank any more than a naval officer ashore, off duty, is required to wear his uniform.

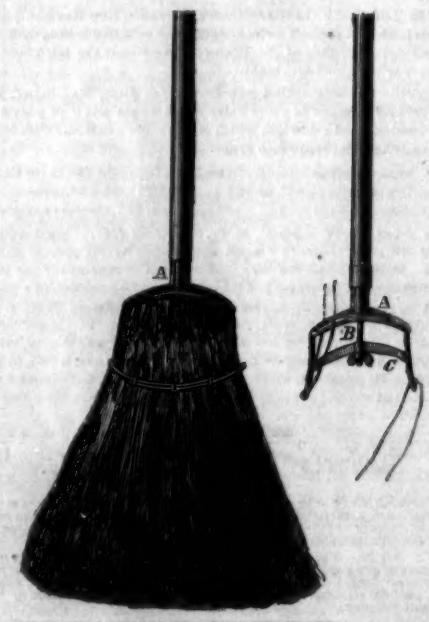
Many of us can remember the great opposition that existed at the time the uniform was adopted by the police force of New York city; and it is well known that, among other good results, the increase of the vigilance and *esprit du corps* of the force are not the least. Indeed, this soon became so plain, that the police in the principal cities of the Union soon adopted the once detested uniform. The manifold advantages of the uniforming of conductors, baggage masters, and brakemen, will suggest themselves at once to every one who has had much experience in railroad traveling—advantages both as regards comfort and safety. Instead of wandering about the station, while the engine is fixing away, impatient to start, in order to make a necessary inquiry, one can now distinguish the officers at a glance; and, instead of asking a dozen people before he hits the person he is in quest of, he can go at once to the proper authority.

We will venture to predict that so great an improvement will result from this important innovation, that it will, before long, be adopted by other States; indeed, we hope it will be made general, all over the Union.

No doubt there are some roads where its benefits would be more strongly felt, on account of improving the discipline, than others which we might name, which are managed with skill and administrative capacity. This subject has occupied our attention for some time; and the only argument which has ever been urged, to our knowledge, against the uniforming of railroad officers, namely, the opposition of the employés themselves, we think, will cease as soon as they have seen the benefits of the change.

PACKER'S PATENT BROOM HEAD.

The ordinary broom soon becomes permanently curved and worn to a stub. As the broom corn can be easily obtained at a low price, and the handle and labor of attaching the broom corn to the handle constitutes the greater part of its cost, the inventive genius of the country has designed several devices for securing new corn to the handle when the original is worn out, with but little labor and diminished cost when compared with the original first price of a broom. The one shown in the engraving is exceedingly simple and very cheap.



The head, A, is of metal and is secured to the handle by a socket. Near the lower end of the handle a bolt, B, is inserted and held, having on its lower end a threaded thumb nut which moves the yoke, C, that is guided by forks on its ends which slide on the side arms of A. The lower ends of these arms have wires passing through loops in the arms, which wires are bound through the broom and secured by means of loops passing over wires or bars going across. In filling the broom head the buts of the corn are laid across the concave side of the cap or head, in alternate layers, with their brush projecting upon either side. The binding bar is then forced down upon it crowding the buts into the concavity of the head and clamping it securely into place. The bands (outer) and the wires are then moved to place, sweeping the corn to position, and secured by hooking.

This device was patented through the Scientific American Patent Agency, Aug. 6, 1867, by T. G. Packer, of Mexico, N. Y., who will answer all inquiries relative to the sale of territory or rights to manufacture.

Rapid Scientific Progress.

Perhaps nothing can show how much more rapidly the republic of mind advances, in rendering practical results, than any one mind, however practical, and however scientific, could alone effect, so well as the rapid applications of science, which are now being effected in this country and Europe. When Napoleon crossed the Alps, no one thought of piercing them as his successors are doing. The idea was too great and novel, even for his most original and daring grasp of thought. When he was longing to break down the British Empire of the seas, and his flotillas were waiting at Bologne, with his men and horses, already to invade England, there was a man Fitch, who had driven vessels by steam on the Delaware, and another Fulton, who could and would have ferried him across the channel by steam, safely, had Napoleon had faith in steam and in him. Now, steamers cross that same channel in two hours or so, and railroads are not only penetrating, but locomotives are climbing over the Alps, as easy as a kitten sticks in her claws and climbs over a fence. The spirit of humanity, that is, the joint thoughts of many men, take in advanced ideas, and reduce them to practical and working order, more than any one autocratic mind alone. One mind carries an invention one step, and then it is exhausted and can go no further. But another begins where the former left off, until, step by step, hights are climbed, and depths are sounded, and difficulties bridged over, that only a succession of various constituted minds could effect.

There are at this time one or two ideas gaining ground daily in the public mind, and certain to work themselves out into practical shape in a very few years, and with the most practical results. One is by means of signals from Cape Hatteras Light House, to inform vessels passing within sight or sound, of the state of the weather, as to storms up and down the coast. The laws of storms are now getting each year to be better understood, so that from the state of the weather at certain points the mariner can know when he is safe at others. For instance, the most dangerous storms to the sailor are those northeast gales which sweep along the coast, beginning generally in the southwest. They probably originate in the Gulf of Mexico and strike the coast of Florida or Georgia. By telegraph the news of such an approaching storm can be signalled from Cape Hatteras to vessels going southward as they pass, and from twelve to thirty-six hours before they can prepare for the most dangerous storms of the coast. A notice of this kind will enable shipmasters to calculate beforehand the entire dangers of his voyage from Hatteras down to Charleston, Savannah, or Key West, and, if necessary, put into some intermediate port, and lie in safety till the storm has passed. That such signal systems will be arranged there can be no doubt. Nor is there any doubt that eventually it will extend all along the coast, and produce immense good.

Another invention will almost be as great an improvement upon the railway system as that upon the four-in-hand stage coach. We allude to the system of pneumatic railroads, a model of which was recently exhibited in New York at the American Institute. It has for some time now been successfully demonstrated that letters and parcels could be transmitted successfully, all over London, on little railway cars, forced through air-tight tubes by the air-pump—in fact blown through. These tubes have been laid underground thus far, but there is no reason why they should not be made larger, so as to include passenger trains. It is asserted that the first cost of this tubing will be but $50,000 per mile, and that of working the engines far less than that of running locomotives.—*Philadelphia Ledger.*

PREVENTING RAILROAD COLLISIONS.—A correspondent of the *Mechanics' Magazine* proposes a plan whereby every train on a track shall communicate with another, before or behind it, whenever the two approach within a certain distance. Electricity is the means employed, the engines of the trains carrying batteries one wire from which connects with the engine bell, the other connecting with the earth. Light insulated supplemental rails, made in continuous length of two miles each, are laid by the side of the main rail, so that the tire of the locomotive wheel runs on both. As long as two trains are not at the same time on one length of conducting rail, no electric current can pass on account of the break joint, but as soon as they come within this particular distance of each other the circuit is completed and both bells will ring.

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THE HABITUAL CARELESSNESS OF MECHANICS.

It is said that "familiarity breeds contempt." Whether this is so or not, it is very sure that "familiarity produces carelessness or indifference." Men who have spent years among machines, and know their power, their inexorable and unpitying course, their disregard for human life or limb, their ungovernable impetus when not held, like a vicious horse, "well in hand," come to look upon these mighty engines, driven by an almost irresistable force, as playthings, which may not only be governed by legitimate means, but played and toyed with. How often we see the engineer or "greaser" of a stationary or marine engine, following the connecting rod or crank with one hand and with the oil can in the other, allowing his hand and arm to pass through a space which barely permits the passage of his limb, and doing this with apparent unconcern. We have seen the engineer of an upright stationary engine, the cylinder of which was on one floor and the walking beam above an upper floor, jump on the cross head and travel up and down half a dozen times, oiling the slides; he a man weighing over two hundred pounds and passing through a hole hardly more than fourteen inches square. A mis-step would have been fatal or nearly so—at least the adventurer would have been hopelessly crushed. In cotton mills it used to be not uncommon to see the "piecer" on a mule reach over to attach a broken "end" when the outward coming carriage would almost take him from his feet, which event would have pierced his abdomen with several rapidly-revolving and sharply-pointed steel spindles, insuring as certain death as the spinning ball from a spirally-grooved rifle.

This carelessness, which becomes, in time, habit, leads, not seldom, to unpleasant, if not fatal, results. The operator of a machine, having learned all its "points" and believing he controls all its powers, frequently assumes a management which he is incompetent to oversee, and becomes careless; the machine refuses to obey his behests, and he is mulcted in an arm, or leg, or life.

We recollect, in our practice as a mechanic, a foreman who ridiculed the idea of throwing a belt from the shaft for repairing or "taking up," preferring it should be unlaced while hanging in dangerous contiguity with swiftly-revolving pulleys or couplings, and attempted the mending of a belt while hanging on a shaft in alarming proximity to these care-nothings for human life. He lost his arm and nearly lost his life. He had little sympathy but much annoyance, and not a little trouble.

At the fair of the American Institute in New York city a week or two ago a practical machinist placed his hand under a hammer to remove a "smashed" copper. The copper was smashed and so was his hand. It was an accident; but such an accident as anyone but a person, thoughtless through familiarity, would never have been victimized with. Poor McGowan paid dearly for his temerity; he lost his good right hand. Linnell, also, the engineer of the Babcock & Wilcox engine, although not careless, in the common acceptation of the term, was foolish in risking his life on the holding of a common forked wrench, which every machinist knows is not to be depended upon. He sat upon a plank running past the fly wheel of the engine, and applied his large forked wrench to the nuts of the cap of the crank shaft; the wrench slipped when he had his whole power applied to it, and over he went into the wheel. Nothing could be more admirable than his presence of mind in holding to the arms of the wheel, which he did while whirled around with immense velocity, until, probably, either through his senses deserting him or through the influence of dizziness, he let go and was thrown with the force of a stone from an ancient catapult, or the centrifugal momentum of a stone from a boy's sling, and landed, almost a shapeless mass of humanity, among the debris of the machinery he demolished in his course.

These instances show the necessity of carefulness in the management of machinery. We can never forget the advice of an old-fashioned machinist to his apprentice on this subject: "Better be foolishly careful than foolishly careless." Many mechanics seem to imagine they are doing a nice thing to put on airs before those who do not understand machinery. It is not so. They are the recipients of pity, if not of contempt.

EXPERIMENTS WITH AN ELECTRIC LIGHT AT THE BATTERY.

On the evening of the 17th inst., an electric light was tested on the top of the Barge Office near the Battery, in this city, with very satisfactory results. The apparatus for generating the electric current consisted, as usual for such purposes, of a magneto-electric machine. This machine consisted of several series of horseshoe magnets, 58 in all, fixed in a frame, within which is a cylinder thickly bound with soft wire. This cylinder is made to revolve with very great rapidity by means of a small steam engine, said to be of two horse-power.

The action of the horseshoe magnets on this rapidly-revolving cylinder is to generate, by induction, an immense amount of electricity. The current of electricity is carried by a conducting wire to the place where the illuminating apparatus, or electric lamp, is placed. At this place and at a proper distance behind a Fresnel lens twelve and a half by sixteen inches, the conducting wire is separated and the current or circuit is broken; here are attached, one to each part of the broken circuit, a crayon or pencil made of the coke of anthracite coal—in other words, pure carbon. These pencils of carbon nearly touch each other, and the powerful current of electricity, produced by the two-horse engine, passing along them in the direction of their length consumes their points and generates a light almost equal in brilliancy to that of the sun himself. As the points of these carbon crayons burn off, they are fed up by means of clock-work so that a uniform distance between their points is always preserved and consequently so long as the current is continued with uniform intensity a steady light of magnificent brilliancy is maintained.

These carbon crayons are 8 inches in length by ·33 of an inch square; a pair of these crayons will last four hours; they cost four cents each and will give during their entire combustion a light almost as bright and steady as the sun.

A good idea of the power of the electric light may be had from the fact that the captain of one of the revenue cutters stated "that he had read his newspaper by it at the distance of nearly six miles, and at the Narrows the ordinary gas light displayed from the tower of the Barge Office was entirely lost sight of."

The lens used on this occasion was what is classified as a third-class lens, the largest, a first-class size being some three times as large as this one. It is stated that on an elevation of proper hight the electric light behind even a third-class lens will project its rays a distance of forty miles at sea and that at that distance it can be plainly seen by vessels. In foggy weather it penetrates the mist with the power of the sun and can, of course, be seen at a very much greater distance than that at which the light of a first-class light house would be totally obscure; on this account alone it is quite evident that at those points of the coast where continuous fogs are prevalent this light will strip navigation of much of its danger.

We believe that the want of that absolute reliability in the electric light necessary for light house purposes has been one of the principal reasons why it has not been extensively used, but the time cannot be far distant when all the mechanism connected with it, from the motor which actuates the armature, to the clock-work which feeds up its carbon crayon points, will be made so simple and precise that its reliability will be fully as great as that of the most perfect illuminating apparatus of the old-fashioned light house.

And it seems to us that here is a new and important field for the caloric engine, for no purpose can a dry motor be of greater importance than this; of course we allude to it as the motor for generating the electric current. To say nothing of its danger and complication the skill required in the use of a steam motor on account of the boiler alone, there are many important light houses so situated where steam would be totally inadmissable.

IMPORTANCE OF ACCURACY IN TOOLS.

While every description of hand tool used for manipulating the materials employed in the mechanic arts has reached a state bordering on perfection, it is a lamentable fact that many of the larger tools and machines are faulty in construc ion and inaccurate in operation. It is not uncommon to see engine lathes on which it is impossible to turn a shaft with accuracy except by watching and callipering continually. Thus, the larger part of one man's time is wasted in making up for the imperfection of one tool. We have seen lathes which were left in so unfinished a state that after a few weeks' use the centers of the two heads varied in hight from the ways over one-sixteenth of an inch. Such a tool cannot perform good work. The ways and the grooves in the tail stock were left just as they came from the planer, and it was evident that while on its bed they had never received a finishing chip, which, if planed true, might have been sufficient. Occasionally, also, the ways of a lathe are winding, owing either to their having been sprung in securing to the planer bed or moved before being finished. Some careful builders prefer to "rough off" the ways wherever they are to be planed, and then re-secure them to the planer for the finishing chip. There is reason in this; for it is well known that the "skin" of a casting is greatly contracted, and when it is removed a small casting will show a different form or line from that of the untouched casting. Probably this alteration would be too slight on so heavy a casting as a lathe bed to affect its integrity of outline, but the precaution alluded to, if an error, is one on the right side.

Sometimes the center holes in the arbors are so imperfectly bored and tapered that the center, however perfect, cannot be removed and replaced twice alike unless marked for one particular position; or the arbor of the tail stock is loosely fitted, and, when set to be held by the stay, it is moved out of line so that the two centers of the heads do not agree. Badly fitting screws allowing of "back-lash," imperfectly cut, rattling gears, loose journals, and other results of want of care are vexatious to the operating mechanic and discreditable to the maker of the machine. There is no adequate reason why the same accuracy displayed on small tools, rifles, sewing machines, etc., should not be exhibited on the larger tools of the mechanic. Tools would cost, at first, more, but they would last longer and perform their work more satisfactorily. Skilled labor and good workmanship are costly. They always were; but they are valuable. The day of cheap tools is, we hope, passing away. One good sign is that those who make a specialty of doing the best of work and charging remunerative prices have always orders ahead of their ability to fulfill. Such conscientious manufacturers are not compelled to solicit work, but the jobs seek them.

AMERICAN INSTITUTE FAIR.

When this paper is laid before our readers, the thirty-seventh Exhibition will have been recorded upon the annals of the Institute as one of the most successful ever held under the auspices of that association. The largest hall in the city that could be procured for the purpose, was filled to its best advantage with a variety of articles numbering over sixty thousand, the collection including good representatives of all the important branches of American industry. The efforts of the managers have been thoroughly appreciated by the public, and their patronage has been all that could be desired. The average attendance during the thirty-eight days of its continuance, was about ten thousand persons daily. From 9 o'clock, A. M., up to the hour of closing, there has been a steady influx of visitors of all sizes, ages, and conditions in life. Many of the public and private schools of the city have attended in a body. On one of our visits we found the pneumatic tube, the steam elevator, and other attractions taken possession of by mutes from the State Deaf and Dumb asylum; and on several occasions we have noticed a blind man enjoying to the extent of his ability, the wonders of the fair. If any visitor fondly imagined that a visit to the Fourteenth street armory would fill the place of a journey to the Paris Exposition, such individual labored under a sad delusion, and his disappointment must have been commensurate; but few, indeed, is the number of those who, having visited the fair, have left it with any feelings but those of a pleasurable satisfaction.

THE ART EXHIBITION.

A large and splendid hall is set apart for the art works, musical instruments, fruits, flowers, etc. These form a very attractive portion of the exhibition. The photographic show is very fine, and exhibits advancing improvement very gratifying to all lovers of the beautiful. Mr. H. J. Newton, an amateur photographer of this city, exhibits a series of beautiful views almost perfect in every particular. One of these pictures is a superb view of the fountain and landing place at the Central Park lake. The exquisite softness and distinctness of these pictures render them very interesting. Not the least remarkable thing about them is the fact that they were produced from paper negatives. Mr. Newton works with paper better than many artists do with glass for negatives. Probably the largest picture in the exhibition, printed from a single negative, is that by Rockwood—an architectural view, 24 x 42 inches. It is said to be one of the largest negatives ever made in this country. The life size portraits, mechanical and architectural pictures of Rockwood, are superior. The porcelain pictures of J. M. Henon are worthy of note for their artistic execution. We believe that he presents the largest plain porcelain portraits.—Glosser's horses are fine.—The American Photo-Lithographic Company (Osborne's pat.) make a very fine display, and exhibit remarkable progress and excellence in their work. Copies of engravings and other works, printed by lithography, are produced by them with wonderful fidelity. This is an entirely new branch of art work, the like of which has never before been exhibited.—S. S. Notman & Co., of Boston, show some elegant specimens of grouping, including a number of pictures of distinguished personages. We have before had occasion to notice their work.—A. J. Drummon presents a number of specimens of nitrate of ethryle pictures—a substitute for the ordinary silver prints, by which he obtains much greater sensibility. The prints are done in one fourth the usual time. We believe that the explosive nature of the ethryle is an objection to its manufacture and ordinary use. The prints are excellent.—Huston & Kurtz present a large and splendid variety of colored work, including porcelain pictures in every style. They are unequalled.—Wenderoth Taylor & Brown, of Philadelphia, make a splendid show of everything photographic, including silver prints of all sorts, and, what is rare as yet in this country, spendidly executed carbon prints. These pictures are presented in various tints, and have a most pleasing and novel appearance. Mrs. S. R. Divine exhibits

some fine specimens of photograph painting.—The chromo pictures of H. Wood are of superior character.—The specimens of photo-sculpture, by G. P. Putnam & Son, are remarkable for life like accuracy and artistic pose. Here we have a miniature reproduction in marble of Gen. Grant and his cigar, Horace Greeley and his peculiar coat, and other notables.

The fifth group, under this department, is devoted to a display of musical instruments, which title is made to comprehend fifes, banjos, violins, and wind instruments warranted to be a match for the best developed lungs; grand pianos, square and upright pianos, church and parlor organs, and the orchestrion, which latter, by its daily performance, has added so much to the attractions of the fair.

The endurance of the pianos has been severely tested during the continuance of the exhibition, by the practising thereon by artists of all degrees of musical proficiency, from amateurs, with exceedingly limited knowledge and that of the most elementary character, through the different grades up to the musical professor, with more pretensions and with an execution demanding the expension of a vast amount of physical energy. If any instruments have sustained these combined and prolonged attacks, such pianos are worthy to receive the highest commendatory notice from the awarding committee.

The greatest novelty among the square pianos is Matthushek's "Colibri." With seven full octaves, and the usual length of keyboard, one of these instruments is but little more than half the usual size, and less than half the weight, while possessing the power and brilliancy of an ordinarily sized piano. By the use of an equalizing scale, the enormous tension of the strings is brought to bear equally upon all sides of the iron plate, and this arrangement allows of the small size and weight mentioned.

In group number seven are the cases of mathematical, philosophical, nautical, and surveying instruments, chronometers, watches, and stereoscopes. In the case of Blunt & Nichols, there is to be seen an instrument quite new in this country, called a dipleidoscope. This is an improved construction by this firm on the Dent instrument, and its object is to furnish for watchmakers an inexpensive substitute for the transit instrument in obtaining true solar time. Two prisms, with faces inclined to each other, are mounted in an iron frame which, after adjustment, is fixed immovably to a stone pillar. When the sun approaches the meridian, two images of it are formed by the prisms, which gradually merge into one, the instant of such blending not varying from exact noon, more than three seconds, during a long series of trials. This firm also exhibit an improved form of Pistor & Marten's (Berlin) prismatic sextant; the one shown us, and one belonging to the United States Government, being the only instruments of this style in the country.

T. B. Stewart exhibits marbelized slate mantels in imitation of varieties of marble; we notice one after the sienna marble, another very handsome in design after the verd antique, and one in imitation of Tennessee marble. Additional to their great beauty and moderate cost, the manufacturer claims that these mantels are much more durable, and susceptible of a higher polish, than ordinary marble mantels; and, furthermore, neither oils nor acids have the least effect upon them. The slabs of slate are dug from the deepest quarries, and the process of marbleizing, as it is called, consists in the successive applications thereto of three coatings of a mineral paint, each coat being incorporated into the slate by baking, at a temperature of 400° Fah. These mantels are made at the factory, No. 605 Sixth avenue, in this city.

The Middlefield Building Stove Company display several specimens of mantels, made from white marbles of the toughest variety, which are decorated to resemble the most costly native and foreign marbles. The samples at the fair are very handsome, and commend their own merits to every beholder.

The managers distinctly announced before the exhibition opened, that while taking efficient measures to protect the property of every exhibitor, they would not hold themselves responsible for loss, each article being taken at the risk of its owner. As a matter, then, simply of regret, and not reflecting any discredit upon the management of the Fair, we refer to the fact that several exhibitors of small articles have lost goods of greater or less valuation, such articles having been taken from their tables between the hours of closing and opening, when none but employés had access to the halls. The exhibitors of wines were, we believe, the heaviest losers, but the purloiners did not hesitate to patronize the blacking manufacturers, while the kaleidoscope and fancy box companies, and many others, have been relieved of wares of considerable value.

The managers deserve credit for their untiring devotion to the interests of the Institute and of the exhibitors. Mr. W. H. Hicks, of the engines and machinery department, and Mr. McElroy, who has charge of the steam department, have taken a direct and active interest in the success of the exhibition and contributed not a little to this end. We single out these because exhibitors were oftener brought in contact with them, but all of the board of managers have performed their duties satisfactorily to the public and creditably to themselves.

Some further notices of the Fair and the awards will appear in our next.

Inadequate Pump Tubes.

A correspondent from Kansas makes the following statement with the accompanying query; "We set a pump 23 feet above the level of the water at a distance of 130 feet. Next the pump we had 90 feet of one-inch iron pipe, to which was attached 40 feet of lead pipe of the same interior diameter, but dented in some places, otherwise perfectly clear. Now, notwithstanding the pump was in good order, we could not get enough water through it to supply the boiler. We took the pipe up and put down 90 feet of two-inch iron pipe in place of the one-inch, to which we attached enough of the one-inch pipe to reach the water. The supply of water now is ample. Why is it?"

The "why" is simply that the 130 feet of pipe was entirely too small for its length. Raising the water 23 feet, even if the pipe is perfectly tight and terminates in a perfect vacuum, would give only 75.36 cubic inches of water per minute. Now the motion of your pump, giving but half the time for the water to flow and having to start and stop the column at each stroke, reduces the amount one-half, and you would get actually only 18.84 cubic inches per minute. With the two-inch pipe you would get about four times that amount. The length of a pump tube should determine its diameter. No fault is more common than giving inadequate cross section or diameter to pump pipes.

The Language of Japan.

Dr. Roehrig, to whom we owe the following interesting communication on the language of Japan, informs us that one of the greatest and almost invincible obstacle which foreign nations meet in their intercourse with the inhabitants of Japan, who have lived so long and so rigorously secluded from the remainder of the world, is unquestionably the complicated and peculiarly difficult Japanese language; and, in fact of all the known languages of the globe, that of Japan seems to be the most rebellious to foreigners, and will under ordinary circumstances, forever baffle their most strenuous efforts for mastering it, in however slight a degree. The study of this extraordinary language has to be commenced in early years, and an extensive and thorough acquaintance with the proverbially difficult language of China is an indispensable prerequisite to a fair knowledge of Japanese. It is, however, important to distinguish between the spoken language of Japan and that which is used only in literary composition. Of the former the colloquial Japanese, as much as is needed for the common purposes of every-day life, can in a measure be acquired by routine and a prolonged stay among the people of that country. This is a far less arduous task than the acquisition of the incomparably more difficult language of the Japanese books. But even in this merely conversational tongue we meet with a good many things which will render the progress very slow, the final mastery very uncertain, and the study exceedingly tedious and discouraging. These difficulties affect the pronunciation as well as the syntactical structure; they apply moreover to the idiomatical peculiarities, and have an important relation to the intricate rules of Japanese etiquette and politeness. As regards the pronunciation, the correct utterance of the Japanese sounds is by no means an easy matter. Thus the *g* and the *n* final are pronounced with a peculiar nasalization, especially the former; *f* and *h* are not always very distinct; there is a particular mode of uttering them which cannot be easily imitated by *our* vocal organs. There is also a sound which seems to fluctuate between *r* and *d*. The Japanese have no *l*, the *l* in foreign words is constantly expressed by *r*, and when they pronounce English, they almost invariably say "*right*" for "*light*," and the word "*long*" is uttered by them in a manner which makes it sound like "*wrong*," etc. The Japanese language belonging to the class of agglutinative languages, and being in some remote degree related to the Ural-Altaic family, of which the Mantchoo, Mongolian, Turkish, etc., form a part, it shares with a portion of the languages in this class the construction which we might call a constant *inversion* of the mode and order in which *we* think. Thus, all those languages would *begin* their sentences where we *end* ours, so that our thoughts would really appear in their mind as inverted. Moreover, the word which characterizes or determines another has to precede it, so that not only, as in our language, the adjective comes to stand before the noun, but also the possessive or genitive case before the nominative, and the objective case before the verb. The principal verb always closes the whole sentence; all other verbs that occur in the sentence are put in the form of a participle or gerundive, whereby the sense remains, in some measure, undetermined and suspended to the end of the period. Then and then only it will be seen, in a great many cases, whether the whole sentence had to be understood as past, present or future; as affirmative or negative; whether a reguest was granted or refused, or an offer accepted or rejected, etc. The Japanese construction is, therefore, the very reverse of the syntactic order of the language of China. That most heterogeneous Chinese element which has almost submerged the genuine idiomatic nature of the Japanese language is, although of a paramount importance to the student, nevertheless a foreign intruder, somewhat similar to the abundant Romanic element in our purely Germanic English, or to the Hebrew-related Arabic in the purely Indo-European, Persian, and Hindustani. Another great difficulty results from the extreme ceremoniousness and politeness of the Japanese. Thus, in speaking with any person (except a son or a servant), it is always of the greatest importance to choose expressions which show our respect for the individual we address, in a measure, exactly proportioned to his rank or social standing. In speaking of absent persons, the same rule has to be strictly observed in regard to all the deference, honor, and respect to which such persons may be entitled. On the contrary, in speaking of one's self, it is always necessary to use expressions of great humility. This affects, in either case, the choice of the pronouns (of which there exist a great many different forms to serve all purposes), and the selection of an appropriate form of the verbs, different in the various moods and tenses; it affects likewise the declension of the nouns in the cases, as well as the formation of the plural; it affects even the particles and the whole quality, meaning, form, and nature of the words used in conversation. There exists, moreover, in Japanese, a large number of honorific verbs that express nothing but manifestations of humility and submission, or a display of courtesy and refined etiquette. When speaking of two persons at the same time, one of whom is much higher than the other, then we have to add to the name of the latter both a particle of respect and one of humility, thereby to indicate our respect for him, and also to show that a still greater honor is to be bestowed on the other person mentioned, on account of his superior condition and rank. Thus, to speak Japanese in a fairly correct manner, we have constantly to consider the person in whose presence we speak, the person to whom we speak, and the person of whom we speak, and this is often even extended to things or objects belonging to or sustaining any relation to such persons. As to the written or book language, of which we may treat on some other occasion, it is fraught with so many and such inextricable difficulties, that Father Tyanguren declared it (see his grammar, published in the city of Mexico, 1738, under the title "Arte de la lengua Japona") to be "simply an artifice of the devil to keep the Gospel out of that country." In fact the Bible has never yet been published in Japanese, and a complete manuscript translation of the Scriptures, by the Rev. Mr. Brown, missionary at Yokahama, was unfortunately consumed in a late conflagration in that city.—*Philadelphia N. American.*

Common-Sense in the Use of Machinery.

To devise improvements in any branch of mechanical science involves the exercise of a certain amount of original genius; and to fully develope such improvements, and to bring them into the most practical shape, requires, in addition to this, the application of acquired knowledge for the construction of the machine or apparatus in such manner that each of the different parts thereof may be properly proportioned and arranged with reference to the particular function which it is designed to fulfill. When this is done and the apparatus completed, its useful mission has commenced, and, except in inventing further improvements or modifications, neither inventive talent nor skill in construction can be employed upon it. Yet, however complete in itself, or however effectually it may perform its work, it is not endowed with the faculty of self-preservation, and, unless it be properly cared for, will be subject to numberless accidents and injuries, involving not only its own immediate or ultimate destruction, but, in many instances, the loss of life or limb to those employed in its operation. This necessary care requires not the attributes of genius or professional skill, but simply the exercise of common-sense. It is by prompt attention to little things that the maximum efficiency and durability of all mechanical appliances are secured. When the bearings of shafts are not oiled with sufficient frequency, not only does the increased friction necessitate a greater amount of power to drive the shaft, but the journals are abraded and destroyed in a proportionate degree. When the caps of a journal-box are left too loose, the journal "wabbles; and, if there is gearing attached to the shaft, its teeth are quickly worn out of their proper shape; while if the caps are screwed down too tight, the journal heats, the lubricating material is forced out or burned up, and both the shaft and bearing are soon rendered worthless. These matters may appear of trifling consequence, but the aggregate loss resulting therefrom is very great, and is not confined to machinery employed in manufacturing operations, but also, and probably in a greater degree, to machines employed in agriculture. Many a thresher, horse-power, or harvester has been anathematized as being badly constructed, and been prematurely disabled, when a few drops of oil or two or three turns of a wrench was all that was required to set things perfectly to rights. Many other items might be specified in which little attention to details, requiring only an ordinary application of common-sense, will guard against great and unnecessary waste of power and wear of machinery; but these are sufficient to illustrate the almost self-evident proposition that, while talent is required to originate, and practical knowledge to properly construct, machinery, its most efficient operation and the pecuniary returns resulting therefrom can only be secured by bringing to bear upon its management the plain and undeniable principles derived from every-day experience; or, in other words, by the employment of common sense.—*Exchange.*

The Hard Rubber Patent and the Dentists.

The present age, more than any other has done, offers a reward to the successful inventor, not that inventions that are made now are of more intrinsic value than former ones, but in the present condition of society, a valuable invention is more apt to come rapidly into use, and the patent laws are available, as they were not years ago, to secure to the inventor a profit. Moreover, the rapidity with which an invention is applied to uses which were not, perhaps, at all in the inventor's mind, oftentimes brings immense returns, whose unexpectedness tends to encourage other men to seek for wealth in this way, which has in it something of the risk and chance of the lottery or the gaming table.

A striking instance of this kind may be found in the patent decision, a note of which we publish this morning, involving the right to use hard rubber, as it is called, in dentistry. The man who invented hard rubber had not, in all probability, the slightest idea of his invention being useful in that particular way. But when once he made his article, it needed very little for some one to think that, if it was mixed with vermillion, so as to resemble the color of the gums, it would be available for plates on which to set false teeth as nothing else could be.

The result is seen in this case, of which we have spoken. There are, as it is stated, some 6,000 dentists in the United States, all of whom want to use this article, and who by force of this decision are called upon now to pay to the owners of

this patent for its use. No wonder that a strong effort was made on their behalf to relieve themselves from this tribute. No wonder that as strong and a more successful effort was made on the part of the patentees to secure so valuable a right, all the more desirable possibly because it was not thought of at first. The suit probably involved as large an amount of money as any patent case which has been heard in this city for a long time.

Who would not be an invertor if he could only seize such a prize as this, or such a prize as that of the late Elias Howe, Jr., to whom nearly 150,000 sewing-machines paid license fees last year? But we cannot all invent a sewing machine or hard rubber. Still the resources of nature are not exhausted, and the future, we doubt not, has yet greater prizes to offer than any that the past can show.

The above very truthful remarks, with the report of the trial annexed, we copy from the New York *Times* of the 23d Oct. This decision is not only very important to the dental profession but likewise in a less degree to all persons who are obliged to wear artificial teeth.

UNITED STATES DISTRICT COURT.—SOUTHERN DISTRICT.—BEFORE JUDGE NELSON.

IMPORTANT TO DENTISTS—RUBBER PLATES FOR ARTIFICIAL TEETH—DEDICATIONS—REISSUE.

Henry B. Goodyear and others *vs.* Thomas G. Wait.—This was a case in equity to restrain the defendant, who was a dentist, from an infringement of the invention of Nelson Goodyear in the manufacture of vulcanized India-rubber. The facts of the case are substantially these:—In the year 1851, May 6, a patent was issued to Nelson Goodyear for an improvement in the process of Charles Goodyear, in preparing India-rubber. The latter having taken out a patent in June of 1841 for a new process of vulcanizing India rubber, which was reissued in December, 1849. Nelson Goodyear's improvement consisted "in thoroughly mixing the rubber with sulphur, whether with or without auxiliary ingredients, in the proportion of about four ounces to a pound of sulphur to a pound of gum, and then subjecting the same to a high degree of heat, as in the vulcanizing process of Charles Goodyear, until the compound shall have acquired the hard, tough, and springy property." This first patent of Nelson Goodyear was surrendered, and reissued May 10, 1858, for a defective specification. On the surrender two patents were issued, one for the process and the other for the product, or new manufacture.

In the year 1854-5, afterward in 1857-8, the subject of the application of this compound of hard rubber to dental purposes engaged the attention of the proprietors, and in 1858, the application for these purposes having become perfected, agencies were established for the vulcanization of dental plates in the city of New York, and elsewhere, and public notice given of the same to the profession. These plates were made by mixing the compound with a certain proportion of vermillion. Infringements were immediately commenced, and some suits were brought to restrain such infringements, and various steps were taken to secure the rights of the patentees to this use of the article in dentistry. The defendant was a dentist, and was charged with having used this hard rubber in making and selling plates for artificial teeth.

The defendant contested the right of the plaintiff upon the following grounds: 1. He claimed that the reissued patents were void for want of authority in the Commissioner of Patents to issue them, on the ground that the process and the product which were described in the original patent both being new, constituted but one invention, and that the claim for either in a patent would cover both, and the case was, therefore, not one in which a reissue was allowed. 2. He claimed that the patents do not describe the invention in such full, clear and exact terms as to enable any one of ordinary skill in the art to make the hard rubber without experiment or further invention. 3. He claimed that as respected the use of the compound for dental purposes it had been dedicated to the public.

Held by the Court—First—That though it was held in Goodyear *vs.* The Railroads (2 Wallace, 360), that the process of Charles Goodyear in vulcanizing India-rubber embraced the new product, it does not follow that the claim for the product will protect the process; that where by a new process a new product is produced, the inventor is entitled to the allowance of both claims; that though both might have been in this case properly embraced in one, yet that is a question very much left, and reasonably so, to the good sense and discretion of the Commissioner; and that the original patent was properly surrendered to amend the claim, and that the reissue of two patents was unobjectionable.

Second—That the question as to the description in the patent was one which the Court had considered in the case of Goodyear and Poppenhusen *vs.* The New York Gutta Percha and India Rubber Vulcanized Company, in October, 1862, and it was there held that the description in the patents, both as respects the proportion of sulphur and rubber and as to the degree of heat necessary, was sufficiently full and certain within the requirements of the present law; and that the proofs in the present case confirm the correctness of the former decisions.

Third—That on the facts no dedication of the patent to the public is shown. The owners of the patent, besides having agencies over the country and published in a quarterly called the *Vulcanite* a list of their agents, with notice that they would furnish the compound to licensees only, and sold the compound in many places put up in boxes, in the label on which was a notice that it was to be sold only to licensees, and the defendant being examined as a witness admitted that he bought his compound at one of the Company's depots, in boxes having that label, and that in 1864 he was called on to take out a license, and declined on the ground that licenses were not protected, and that he had seen circulars warning against infringements, and was aware of suits against infringers, and that the defendants own testimony is abundantly sufficient to repel the conclusion of dedication as to himself.

Decree, therefore, for complainants, with a permanent injunction and a reference to the Clerk to ascertain damages.

For plaintiff, Messrs. Stoughton, Keller and Blake; for defendant Messrs. Curtis and Law.

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office,

FOR THE WEEK ENDING OCTOBER 22, 1867.

Reported Officially for the Scientific American

PATENTS ARE GRANTED FOR SEVENTEEN YEARS the following being a schedule of fees:—

On filing each Caveat.....$10
On filing each application for a Patent, except for a design.....$15
On issuing each original Patent.....$30
On appeal to Commissioner of Patents.....$20
On application for Reissue.....$30
On application for Extension of Patent.....$50
On granting the Extension.....$50
On filing a Disclaimer.....$10
On filing application for Design (three and a half years).....$10
On filing application for Design (seven years).....$15
On filing application for Design (fourteen years).....$30

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay $500 on application.

☞ *Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to Inventors, may be had gratis by addressing MUNN & CO., Publishers of the Scientific American, New York.*

69,956.—GYMNASTIC APPARATUS.—G. W. Bacon, London, England.

1st, I claim the combination of a ring, E, with a friction slide or buckle, D, when the latter is secured to one end of a strap, C, and so arranged as to pass readily through said ring and through a suspending link, B, and slide upon the outside layer of the strap, all substantially in the manner and for the purpose herein set forth.

2d, The combination of a hand piece, H, with the straps or bands, e, of my improved gymnastic apparatus by means of adjustable slides secured thereto, substantially in the manner and for the purpose herein set forth.

3d, The adaptation and combination of a swing seat with the stirrups, F, of a gymnastic apparatus, substantially as and for the purpose herein set forth.

4th, The friction slide or buckle, D, of my apparatus, consisting of a suitable metallic frame in combination with a hinged or movable center bar, d or g, constructed and operating substantially in the manner and for the purpose herein set forth.

5th, The use of a brake, d', in combination with a slide, D, substantially as and for the purpose herein specified.

6th, Constructing the rings, E, of my improved apparatus of layers of wood arranged and combined substantially in the manner and for the purpose herein set forth.

69,957.—SLIDE VALVE LUBRICATOR.—Simon H. Badger (assignor to himself and Robert Faulkner), Erie, Pa.

1st, I claim the combination of the cap, D, tubular stem, E, oil cup, H, cross piece, C, recesses, c c, and passages, d d, substantially as and for the purpose specified.

2d, The grooves, e e, in the face of the valve communicating with the passages, d d, substantially as shown and described for the purpose specified.

3d, The combination of the spring, F, cap, D, and top of the steam chest with recesses, c c, and passages, d d, substantially as described for the purpose specified.

69,958.—INVALID BEDSTEAD.—C. S. Baker, Manchester, N. H.

1st, I claim the construction and arrangement of the foot part hinged to the main portion by means of the segments, F, and operated by means of the shaft, G, and pinion, H, as herein set forth for the purpose specified.

2d, The construction and arrangement of the pawl, I, and spring, J, pivoted to the side of the main portion of the bedstead, as and for the purpose specified.

69,959.—CARRIAGE KNOB.—John Barclay, Attleborough, Mass., assignor to himself and Rufus D. Case, New York City.

I claim a carriage knob consisting of jaws, B B, secured to a ring, d, which is fitted loosely over the shank of a pin, A, provided with slots, C, upon the sides of the read, all made and operating substantially as herein shown and described.

69,960.—SCISSORS AND SHEARS.—William B. Barnard, Waterbury, Conn.

1st, I claim the combination of the cutting blades of scissors, shears or lamp trimmers, with suitable handles formed without rebates or recesses to receive the blades, but provided with projecting homogeneous rivets to secure the same, substantially in the manner and for the purpose herein set forth.

2d, I claim also overlapping the end of the tang of a shear blade with the inner edge of a rebate formed to receive it in the end of a suitable handle therefor, substantially in the manner and for the purpose herein set forth.

69,961.—FENCE.—H. Bartholomew, Dover Center, Ohio.

I claim the special construction and arrangement of the herein-described fence, in the manner substantially as described.

69,962.—BOLT TRIMMER.—Jesse Blackinton, Roscoe, Ill.

1st, I claim the combination and arrangement of the cutters, A A, with the connections, B B, and the levers, L M, as herein described for the purposes set forth.

2d, The arrangement of the recess, H, and the elevator bearing, H', in combination with the levers, D L and M, for the purposes set forth.

3d, The slot, F, and the pin, E, in combination with the levers, D L and M when arranged as and operating for the purposes set forth.

4th, The flat-headed bolt, P, in combination with the slot, R, and the levers, L and M, when arranged as and operating for the purposes set forth.

69,963.—CONSTRUCTION OF METALLURGIC AND OTHER FURNACES.—Henning Boetius, Hanover, Prussia.

I claim providing furnaces which are to be used in the manufacture of glass, iron, steel or other metals and substances and for other purposes, with a series of flues, d d, arranged around the outer walls of the fire place or in the walls between the fireplaces for the purpose of conveying air to the combustible gases evolved from the fuel, said flues being provided with a valve or valves, f, all as herein shown and described and for the purposes set forth.

69,964.—APPARATUS FOR DRYING AND DESICCATING.—H. G. Bulkley, New York City.

1st, I claim the openings, H K, when covered with wire gauze, or its equivalent, and regulated by valves and used in connection with a steam atmosphere, for the purposes substantially as specified.

2d, The return flues, N M, in combination with the ash pit, D, when constructed, arranged and used in combination with a steam atmosphere, substantially as specified.

3d, The mode of consuming waste steam and gases produced from substances while drying in kilns, substantially as described.

4th, The perforated ceiling, O, when made of fire-proof material and covered with any incombustible substance and used with a steam atmosphere, for the purpose and in the manner substantially as specified.

5th, The fire-proof kiln, constructed and operated in the manner substantially as described.

69,965.—CARRIAGE KNOB.—Rufus D. Case, New York City, and John Barclay, Attleborough Falls, Mass.

We claim the spring jaws, c c, having square shoulders upon their outer sides, and secured in the wood work to the inner end of the grooved screw pin, A, forming part of the same and adapted to be compressed in the groove, b, in the head, a, of said pin, as herein described for the purpose specified.

69,966.—WEATHER STRIP FOR DOORS.—Joseph Chadwick, Wheaton, Ill.

I claim the arrangement of a rubber packing, d, between the door and lidge, C, substantially in the manner and for the purposes described.

69,967.—CLOUDED YARN.—Joseph Chase, Worcester, Mass.

I claim clouded yarn as an improved article of manufacture made substantially as above described.

69,968.—BATH TUB.—John C. Clapp, Homer, N. Y.

I claim a portable bath made of india-rubber cloth, or equivalent flexible water-tight material, in such a form and manner that it may be collapsed and compactly folded or rolled into a portable bundle, substantially as herein specified.

The combination of the frame, B C D, with the portable bath, A, the whole constructed and operated substantially in the manner and for the purpose herein set forth.

69,969.—WASHING MACHINE.—A. H. Clement, Sunbury, Pa.

I claim the combination of the perforated bottom, D, and perforated slides, C, in radial grooves, b, boards, E, and beater, A B, substantially as described.

69,970.—MEDICAL COMPOUND FOR THE CURE OF RING BONE, SPAVIN, SPLINT, ETC., IN HORSES.—Wm. A. Cleveland, Waterville, N. Y.

I claim the medical compound above described to be compounded and prepared substantially as described and for the purposes described.

69,971.—ICE CREAM REFRIGERATOR.—E. S. Colton, Boston, Mass.

I claim the ice cream refrigerator made as described, that is to say, of the two boxes, A B, the metallic lining, a, the ice receiving space, f, and the three openings and their doors or covers, b C e, arranged together as specified and represented.

Also as an improvement in the molds or vessels for holding cream or liquids to be frozen by such refrigerator the construction of such molds for-aminous on those surfaces to which the cream when frozen would be liable to adhere by atmospheric pressure under circumstances as described.

69,972.—CAR COUPLING.—F. F. Conner, Odin, Ill.

I claim, 1st, The arrow heads, A A', the hooks, K K', the cranks, d d', the lifting rods, e e', the pawls, c c', and side plates, H H', all in combination when constructed and arranged substantially as shown and specified.

2d, The construction of the slotted draw bar, A, in combination with the hook, K, when constructed and arranged substantially as shown and specified.

69,973.—TWEER.—John W. Crannell, Yorkville, Mich.

I claim the arrangement and combination of the irregular recessed cylinder, E, and shaft, S, with the wind chest, A, and cap, C, substantially in the manner and for the uses herein described.

69,974.—WEFT-STOP MOTION FOR LOOMS.—George Crompton, Worcester, Mass.

I claim, in combination with the sets of fingers or prongs between which the chute passes, the mechanism by which through their action the shipper lever is released when the thread is broken, substantially as set forth.

69,975.—MOVABLE TREADLE FOR SMALL LATHES.—W. Jennings Demorest, New York City. Antedated Oct. 12, 1867.

I claim the general arrangement and combination of the base, A, standards, B and C, balance and driving wheel, e, pedal, E, crank, F, and link, G, substantially as shown and described, the whole constituting a new article of manufacture termed the "pedemotor."

69,976.—COMBINED SHEEP RACK AND TROUGH.—George Febles, Fastoria, Ohio.

I claim, 1st, The adjustable pivoted racks, A, troughs, G, and bars, K, when arranged in combination with the frame, B, in the manner and for the purpose substantially as set forth.

2d, The grain bins, C, side, E, in combination with the troughs, G, and rack, A, when arranged in the manner as and for the purpose described.

69,977.—CLOTHES LINE CLAMP.—Christopher C. Fellows, Center Sandwich, N. H.

I claim the combination as well as the arrangement of the two helical springs, C D, with the jawed levers, A B, such springs being connected with the levers by arms extended from the springs and through the levers, in manner as specified.

And with the levers and springs so applied together I claim the connection of the two arms which go through each lever, the whole being substantially as specified.

69,978.—HOISTING APPARATUS.—Roger Finnegan, N. Y. city.

I claim, 1st, The levers, D and D', when provided with tubes, a and a', in combination with the levers, E and E', having cam projections, c, all made and operating substantially as herein shown and described, so that each set of levers will clamp the endless rope, C, during every alternate stroke as set forth.

2d, The levers, D and D', and E and E', when arranged as described in combination with the rope, F, and oscillating shaft, H, all made and operating substantially as herein shown and described.

3d, The arrangement of the cord, H, levers, D D', E E', and tubes, a a', as herein described, for the purpose specified.

4th, Providing the tubes, a a', with the set screws, d, substantially as and for the purpose herein shown and described.

69,979.—SLED.—John Fisher, St. Joseph, Wis.

We claim, 1st, The flexible knee, A, constructed as described, fitting and turning loosely upon the end of the iron axle, B, bolted to the bolster, D, its lower end stepped in the gripe, E, and held in position by means of the iron rave, F, whose center passes over the top of said knee, and whose ends are secured to the top of the runner as herein described, for the purpose specified.

2d, The slide coupling constructed as described, consisting of the loop iron I, bolted to the coupling tongue, g, and sliding upon the slide iron, H, bolted to the under side of the reach, R, the latter being rigidly secured to the front and rear bolsters, D, by the braces, L, all operating as described, whereby the hind runners are allowed a longitudinal play, while the bolsters are inflexible, as herein shown and described.

3d, The inflexible bolsters, formed by the combination of the flexible knees, A, raves, F, slide fastenings, I K, coupling tongue, g, and immovable reach, H, substantially as described, for the purpose specified.

69,980.—FRUIT GATHERER.—T. Flager, Grass Lake, Mich.

I claim the receiver jaws, manner of operating them, mode of splicing my sectional staff with ferrule and dowel combined manner of attaching conductor to staff by means of rings to slide upon the same, also the cushion and elastic attachments, the whole constructed and arranged in the manner and for the purpose specified.

69,981.—CORN CULTIVATOR.—C. Flory, East Donegal, Pa.

I claim the specified arrangement of the pole, A, shovel beams, E F', straight cross bars, D D', with the screw bolts, c, notched and terminal, straight edged shovels, s, all constructed and combined in the manner and for the purpose specified and shown.

69,982.—ADJUSTABLE HOOD FOR COAL GRATES AND FIRE PLACES.—W. T. Foster, Jeffersonville, Ind.

I claim the cowl constructed as described, consisting of the triangular pieces, A B, pivoted together upon a common pivot at a, the part A fitting into the part B, and the latter into the chimney, and constrailed by the springs, C, substantially as described, for the purpose specified.

69,983.—OAR.—Samuel W. Francis, New York city.

I claim an oar, constructed substantially as described, with the combination of devices used and set forth in the specification.

69,984.—OPERATING TELEGRAPH KEY.—William M. Franz, Bucyrus, Ohio.

I claim the combination of the pivoted transverse lever, J, and the slide, A, operated and self-adjusted by the spiral spring, F, or its equivalent, for the purpose, in the manner substantially as shown and described, as aforesaid.

69,985.—PROCESS OF ORNAMENTING MARBLE.—Smith Gardner, New York city.

I claim permeating pieces of marble and other stone, with coloring chemical fluids that will change the color of said stone, substantially as and for the purposes herein set forth.

69,986.—LINING SODA FOUNTAINS.—Wm. Gee, N. Y. city.

I claim the lining or coating of the interior of soda water fountains or retorts, with shells of tin or other suitable metal, subjecting the latter to hydraulic or other pressure, when fitted or adjusted in the fountain or retort, and then electro-plating them, substantially as and for the purpose set forth.

69,987.—MOTIVE POWER.—James A. Glenn, New York city.

1st, I claim the endless rails, B B, when secured to any kind of vehicles or crafts, and when connected with the rollers, E E', moving on the inner and outer edges of the rails, substantially as and for the purpose herein shown and described.

2d, The endless chain, D, consisting of the heads, s s, which are connected by rods, chains, or their equivalents, longitudinally and by suitable connecting rods, laterally, and when provided with rollers, E and E', so as to work within and around the endless rails, B B, as set forth.

3d, Ordinary gear for vehicles and craft, made and operating substantially as herein shown and described.

69,988.—BOSOM PAD.—Edward W. Glover, Medford, Mass.

I claim an inflated bosom pad, made by uniting the sack, C D E F, to the under side of the disk, A B, on the line, H H, which is more or less remote from the extreme edge of the disk, substantially as described, and for the purpose set forth.

69,989.—BAG HOLDER.—Thomas Harding, Springfield, Ohio.

I claim the expanding and contracting of the open spring hoop, by means of the levers, E E, as shown in fig. 1, in connection with the short bars, or levers, G G, constructed and operating as and for the purpose herein set forth.

69,990.—HAND SPINNING MACHINE.—James M. Hart, Des Moine, Iowa.

1st, I claim the arrangement of the clutch, G, driving pulley or drum, M, shifting lever, H, pendent piece, I, the band, K, and the carriage, E, operating substantially as and for the purpose herein described.

2d, The spring rack, c', and pinion, c, in combination with the feed rolls, d d', the carriage, E, the clutch, G, and the shifting lever, H, arranged and operating substantially as and for the purposes herein described.

69,991.—PUNCHING MACHINE.—G. H. Haskell, Baltimore, Md.

1st, I claim the combination of the shafts, G and L, carrying punching and rest wheels, together with feed wheels, I, substantially as and for the purpose described.

2d, I also claim the wedge blocks, F, in combination with the frames constituting the bearings to the shaft, L, substantially as and for the purpose specified.

69,992.—GRAPPLING IRON.—W. H. Hawley, Utica, N. Y.

1st, I claim the combination of the arms, A A, toggle joint, B, and hook, C, constructed and operating substantially as described, and for the uses and purposes mentioned.

2d, In combination with the grappling wires, the elevating and detaching apparatus, constructed and operating substantially as described.

69,993.—KNIFE SHARPENER.—T. Haynes, St. Louis, Mo.

I claim the arrangement and application of the angular steel bar, E, in connection with the bars, D and F, in the manner hereinbefore described, for the purpose set forth.

69,994.—PORTABLE FOUNTAIN.—J. Hegarty, Jersey city, N. J.

1st, I claim the combination and arrangement upon the pedment, B, of the bason, A, to the bottom of which is secured the metal ring, C, with the perforated bason, F, through which the tube, E, passes, flanged piston, D, within the ring, C, and muzle box, H, as described, all operated by the clock work, substantially as herein set forth, for the purpose specified.

2d, The tube, e, as arranged around the shaft, f, and in the stem, d, of the revolving piston, D, in combination with the cylinder, C, secured to the bottom of the bason, A, so that no joints are in the device, that would require a packing to keep them water tight, as set forth.

69,995.—MEDICAL COMPOUND.—Mary Anne Hilt, Syracuse, N. Y.

I claim the above described composition, as made of the ingredients and compounded in the manner set forth.

69,996.—CAN OPENER.—Wm L. Hubble, Brooklyn, N. Y.

I claim the can opener, formed with the cutter, d, made as described, and placed diagonally in combination with the spike, c, as and for the purposes set forth.

69,997.—NEEDLE THREADER.—Arthur Huston, Bristol, Me.

I claim the improved needle threader, made substantially as described, viz., with the spring, c, the series of grooves, b, varying in their sizes, and the series of conical or tapering holes, a, varying in their sizes, arranged together, and with the block or bar, A, as specified.

69,998.—CHURN.—Dwight Hyde, Bridgeport, N. Y.

1st, I claim the dashers, a, bevelled, as shown and arranged on a vertical octagonal shaft, in a spiral ring, one dasher on each side of shaft, substantially as and for the purpose specified.

2d, The combination of the driving wheel, A, gear wheel, B, bent, b b, body, D, with the shaft, c, and dashers, a, when said shaft and dashers are constructed and arranged as set forth as described, for the purpose stated.

69,999.—PLOW.—J. E. Jinkins, Milton, Fla.

1st, I claim the adjustable share, C, applied to the front bar, a, of the frame, a, of the plow, substantially as and for the purpose specified.

2d, The adjustable side cutter or scraper, D, in combination with the adjustable share, C, and frame, A, all arranged to operate in the manner substantially as and for the purpose specified.

70,000.—PUMP.—A. Jusberg, Galva, Ill.

I claim the arrangement of the pump cylinder, A, cylinders, a a2, chambers, G G2, G3, G4, valves, I K, plates, B B2, and F, forming chambers, E, all operating as described, for the purpose specified.

70,001.—HARVESTER.—M. A. Keller, Littlestown, Pa.

1st, I claim the crank shaft, L, and rod, P, in combination with the standard bar, Q, bars, O M, lever, W, rod, e2, double crank shaft, A2, and cutter bar, U, substantially as described, for the purpose specified.

2d, The standard bar, S, lever, T, bar, O, and cutter, V, in combination with the crank shaft, L, rod, P, standard bar, Q, bar, M, lever, W, rod, e2, and double crank shaft, A2, substantially as described, for the purpose specified.

70,002.—HORSE HAY FORK.—J. H. Kendrick, Dayton, Mich.

1st, I claim the adjustable jointed trip brace, G, in combination with the tine, E, standard, A D, and pulley block, F, and clevis, H, all constructed as described, for the purpose specified.

2d, The combination and arrangement of the curved standard, A, tines, B E, brace bars, C D, adjustable jointed trip brace, G, clevis, H, pivoted pulley block, F, pulley, K, on the brace bar, C, all constructed and operating as described, for the purpose specified.

70,003.—TOY CUE.—Eben W. Keyes, Boston, Mass.

I claim a cue, consisting of a handle, K, barrel, L, rod, M, and trigger, O made substantially as described, and for the purpose set forth.

70,004.—HORSE RAKE.—G. W. King, Schoharie, N. Y.

I claim, 1st, The links, e e', hinged to the axle, a, and receiving the rake head, c, in combination with the shafts, b, and sliding seat rider, g, substantially as set forth.

2d, The arrangement of the lever, r, dumping spring, t, treadle, s, levers, m, h and o, and chain, w, substantially as and for the purposes set forth.

70,005.—WRENCH.—B. S. Lawson, Brooklyn, E.D., N.Y. Antedated Oct. 19, 1867.

I claim the slotted tapering wedge, A, in combination with the movable jaw, c, screw, d, and nut, I, all made operating substantially as herein shown and described.

70,006.—CARRIAGE CORNER BODY IRON.—S. Z. Leslie, Hartland, Me.

We claim, 1st, The tube or socket, d, in combination with the body corner irons of carriages, substantially in manner as described and shown.

2d, The spring, f, or its equivalent, in combination with tube, d, and pillar, G, substantially as described and shown.

3d, The flange, b, formed upon the corner iron, to connect with the sills, substantially in manner as and for the purposes specified.

70,007.—HARVESTER RAKE.—Edward I. Layburn, Lexington, Va.

1st, I claim the construction of the rake arm, of two sections, lapped and connected together by means of joints, so as to admit of the lower section having the rake attached to it, being turned independently of the upper section, substantially as described.

2d, The rake guide, D, applied substantially as described, and having a turning pin, f, secured to its inner end, in combination with the fork, h upon the rake arm, E E', for the purpose described.

3d, The cam rail, J', in combination with the cam, J, applied to the reel post, B, substantially as described.

4th, The pivoted and elastic yielding rake, S, applied to an arm which is combined with a reel, and operated substantially as described.

70,008.—HORSE RAKE.—John M. Long, Hamilton, Ohio.

1st, I claim the rake teeth, F, constructed and attached to the axle, D, substantially in the manner herein shown and described.

2d, The arrangement of the shafts, A, slotted axle, D, bar, B, cleavers, C lever, G, and teeth, F, as herein described, and for the purpose specified.

70,009.—CHURN.—H. H. Macklin, New Springfield, Ohio.

I claim the special construction of the adjustable frame, B, and breakers, C, in combination with the plate, B, beaters, D', and box, A, when arranged and operated in the manner substantially as described.

70,010.—TOOL FOR OPENING SHEET METAL CANS.—Chas. Messenger, Cleveland, Ohio.

I claim the rod, C, blade, a, and ring, D, in combination with the plate, A, for the purpose and in the manner set forth.

70,011.—CONSTRUCTING FAGOT FOR BEAM.—W. W. Miller, Safe Harbor, Pa.

I claim the fagots for piling beams, of smooth top and bottom plates, A A, vertical or horizontal plates forming the web, B, all secured together by the bars, c, dovetailed into such top and bottom plates, flush with their ends, and into the web, B, or upon its outer sides, substantially as herein shown and described.

70,012.—PREPARING TOBACCO.—Gabriel Neudcker, Richmond, Va.

I claim the process, herein described, of manufacturing tobacco: by subjecting the pressed tobacco to a temperature of about 120° Fah., until all tendency to vegetable fermentation is destroyed, and then repressing and repacking in fresh cases, substantially as and for the purposes set forth.

70,013.—WAGON AXLE AND GEARING.—L. F. Palmer, Endfield, N. Y.

1st, I claim the construction of a revolving axle, for a wagon or carriage, with two journals or boxes, the outer one in the hub of the wheel and the inner, or other, under the springs or bearings of the body of the wagon on the axles, and their arrangement in the manner substantially as described.

2d, So constructing the lower part of the boxing under and connected with

the springs that the plate, H, can be removed, and the revolving axles, without disturbing the straps, J J, or the springs, or the other parts connected therewith, as described.

2d, The placing over the springs the broad plate, L, and beneath the block, A, the upper part of the boxing of a revolving wagon axle, and binding the same in one fixture, independent of the lower part of the boxing, H, as described.

4th, The perforated plate, L, spring, K, block, A, and box, O, of a wagon with revolving axles, all provided with a tube or passage, F, for the purpose of oiling the boxing and journals, as described.

70,014.—CARBURETOR FOR LOCOMOTIVE HEAD LIGHTS.—F. S. Pease, Buffalo, N. Y.

1st, I claim the combination of a carburetor with the head light of a locomotive when the former is placed within the shell of the head light, substantially as described.

2d, I claim the combination of the spring, the blast apparatus, one or more, and the carburetor, arranged in the shell of a head light.

3d, I also claim an argand burner and a carburetor, arranged within the head light of a locomotive.

70,015.—COAL HOD.—Jacob Pfitzinger, Buffalo, N. Y.

I claim a coal hod having a malleable iron bottom, B, valve, C, short pipe connection, D, and skeleton frame, E, substantially as herein described.

70,016.—EXTENSION LADDER.—H. M. Quackenbush, Herkimer, N. Y.

1st, I claim the hook having an inclined top, e, in combination with the with the spring, d, and parts, A and B, of the ladder, substantially as specified.

2d, I claim the guard finger, f, in combination with the hook, D, and parts, A and B, of the ladder, substantially as specified.

3d, I claim the spring, d, or its equivalent, in combination with the hook, D, substantially as specified.

70,017.—MOP WRINGER.—R. T. Reed, Binghamton, N. Y.

I claim the combination of the frame, B B, consisting of the upright pieces and spring arms, C C, with the rollers, A A, wire or cord, D, all operating within the compass of the area of the pail, constructed substantially as herein described and for the purpose set forth.

70,018.—SKIRT WIRE.—Geo. W. Reynolds, Smethick, Eng.

I claim skirt wire first covered with an envelope of paper, or similar material, applied as described, and then an open braided covering or jacket, substantially as set forth.

70,019.—BUCKLE.—Lawrence Rhoades, Newport, R. I.

I claim the buckle, A A, when provided with the supplementary loops, B B, pivoted at b, in eachend thereof, opening outwardly and upon the sides of the buckle in such a manner that the strain upon the end, C, of the strap presses it against the sides of the frame, and the strain upon the end, D, releases it, as herein set forth for the purpose specified.

70,020.—MACHINE FOR CUTTING CHEESE.—Wm. Rhoads, Jr., and Tiras Gerhard, Reading, Pa.

We claim the revolving table, B, when provided with the cog wheel, b, operated by means of the pinion, c, attached to the shaft, F, in combination with the rack, a, knife, E, and pinioned, d, upon the shaft, D, as herein shown and described.

70,021.—STEAM RADIATOR FOR HATTERS' KETTLES.—John S. Rice, Newark, N. J.

I claim the arrangement of the perforated pipe, C, perforated drum, A, and kettle, B, all constructed as and for the purpose set forth.

70,022.—GARDEN LINE, ETC.—C. Richel, Cleveland, Ohio.

I claim the mechanical movements with a spring, in combination with the chalk box and line, substantially as and for the purpose set forth.

70,023.—CARPET STRETCHER.—Wm. A. Robinson, Grand Rapids, Mich.

I claim the combination of the ratchet bar, g, pawls, k k, and lever, l, with the gripes, A A, and platform, m, substantially as and for the purpose intended.

70,024.—BUNG AND BUSH.—John Ruegg (assignor to J. G. Marriott), St. Louis, Mo.

1st, I claim the bushing, A A1, when provided with screw threads; a a1, and rivet holes, s2, and with a cap or lock plate, C, as described and for the purpose set forth.

2d, I claim the bung, B, when provided with screw threads by means of which to secure it to the bushing, and the vent channel, b1, and wrench shank, b, as and for the purpose shown and described.

70,025.—PROTECTOR FOR THE EDGES OF COLLARS.—Cyrus W. Saladee, Newark, Ohio.

I claim protecting the wearing edge of collars and cuffs by securing thereto the shield piece, B, in the manner and for the purpose substantially as shown and described.

70,026.—LOOM SHUTTLE.—F. W. Sawyer, Grafton, Mass.

I claim a shuttle having friction rolls, B B, the journals of which are supported in bearings inserted in slots or recesses cut or formed in the bottom of the shuttle, substantially as described.

70,027.—WHEELS FOR VEHICLES.—W. T. Sawyer, Mobile, Ala.

I claim a wheel provided with spokes, D, and supplemental spokes, C, having their inner ends confined upon the hub by means of a groove, or its equivalent, substantially as and for the purpose set forth.

70,028.—CONSTRUCTION OF ROOFING.—John Scanlan, Chicago, Ill. Antedated Oct. 16, 1867.

1st, I claim so arranging the several layers of material used in forming the strips of felt roofing as to make the edges of said strips thinner than the central portions, substantially in the manner and for the purposes specified.

2d, I claim as a new article of manufacture the roofing strips composed of the material, and arranged in the several layers herein specified.

70,029.—ROOFING FABRIC.—John Scanlan, Chicago, Ill. Antedated Oct. 16, 1867.

I claim, as a new article of manufacture, roofing composed of two layers of saturated felt and one layer of dry felt, arranged as and for the purposes specified.

70,030.—FELT ROOFING.—John Scanlan, Chicago, Ill.

I claim, as a new article of manufacture, roofing material manufactured in strips and composed of three layers of saturated felt, arranged as and for the purpose specified.

70,031.—METHOD OF PROTECTING THE HEATED PARTS OF FURNACES.—Ed. Geo. Scovil, St. Johns, New Brunswick.

I claim protecting metallic and other surfaces from the effect of heat by the circulation of water when the circulation is caused by the heat and in the manner as substantially herein shown and described.

70,032.—HAY RAKER AND LOADER.—Bradford Shirley, Mozarvia, N. Y.

1st, I claim the revolving frame, C, the rake teeth, I, moving radially, as described, and the arms or teeth, a, combined and arranged as represented, and adapted to operate together, substantially as and for the purpose herein specified.

2d, I claim, in connection with the above described frame, C, the teeth, I and a, or their equivalents, the cams, K L, constructed and arranged as represented.

3d, I claim, in combination with a revolving rake wheel or frame, C, and its several connected parts, I, J, and cams, K L, substantially as represented, the employment of the yielding rake teeth, D, adapted to slide on the ground, and the intermediate teeth, G, the whole combined and arranged for joint operation, substantially as and for the purpose herein set forth.

70,033.—SLOTTING MACHINE.—Elias Shopbell, Ashland, O.

I claim the punch or chisel, D, provided with angular cutting lips, E, in combination with the die, B, and hinged guide, F, when arranged in the manner and for the purpose described.

70,034.—LIFTING JACK.—E. Shopbell, Ashland, Ohio.

I claim the perforated tubular standard, A, with the pivoted lever, C, and cam, E, in combination with the slide rack, B, pawls, D, and spring, B1, all arranged and operating conjointly, substantially as and for the purpose set forth.

70,035.—HORSESHOE.—Silas Sloat, Morgan, Ohio.

I claim the securing the horseshoe, A, to a metal flange, B, having a vertical portion, c, with a horizontal portion, c, projecting from its inner side or surface, in combination with pieces, C, of leather, or other suitable material attached to the portion, c, of the flange, as shown, and the elastic metal strips or bars, E E, attached to C C, and provided with lateral projections or spurs, 1, which pass through, C C, into the wall of the hoof, and are retained therein by the strap, F, all arranged, substantially as and for the purpose set forth.

70,036.—ENDLESS CHAIN.—Amroy B. Smith, Yankton, Dakotah Ter., assignor to Frank M. Smith, Chicago, Ill.

1st, I claim the polygonal wheels, A A1, each having an odd number of angles, when so placed in relation to each other that when an angle of one is vertically above its shaft, two angles of the other shall be equidistant from a vertical line passing through its shaft, in combination with the endless chain of buckets, in the manner described.

2d, The endless belt, D, composed of the plates, p p, constructed as shown, and connected by the hinges, h h, and rods, r r, and bearing the buckets, M M, when constructed and operating substantially in the manner and for the purposes specified.

3d, The combination of the belt, D, and wheels, A A1, in such a manner that in passing over the wheels, the hinges, h h, and connecting rods, r r, of the belt shall rest on, and be supported by, the bars, C C, substantially as and for the purposes shown.

4th, The connecting bars, C C, having the channeled bed in their center and their extremities bent up, substantially as and for the purposes set forth.

70,037.—VENTILATOR.—Antonio F. Smith, Ellsworth, Me.

I claim the said ventilator and spark annihilator, made substantially as described, viz: of the box, A, the induction and eduction smoke pipes, D E, the perforated partitions, B C, and the ventilating pipe or pipes, E, or with the same, and the deflector, G, arranged as specified.

70,038.—APPARATUS FOR CASTING REFRACTORY METALS.—Michael Smith, Philadelphia, Pa.

1st, I claim the provision, in a mold for casting metals, of a plunger, K, and a separate injecting vessel or cylinder, J, having a lining of clay and plumbago, or other suitable nonconducting material, to be detached in the manner described, and a temporarily closable communication with the molds, substantially as and for the purpose set forth.

2d, The combination of the mold box, D, detachable thimble, I, injecting cylinder, J, and plunger, K, all constructed, arranged, and operating in the manner and for the purposes explained.

3d, The arrangement of a series of molds, having consecutive orifices or gates, a slab or follower, B, and set screws, F, and box, D, as and for the purpose set forth.

4th, I claim the subject of the clause last recited, when inclosed within a tight chest, G, having suitable connection with an air exhaust for the purpose stated.

70,039.—BUTTON.—D. M. Somers, Brooklyn, N. Y.

I claim the combination and arrangement of the button provided with a conical aperture through its shank or neck, the largest diameter of which is at the face of the button, and the disk provided with a hollow central stem, to pass into and be expanded within the aperture in the button, all substantially as described and for the purposes set forth.

70,040.—SHANK LASTER.—W. Steele, and F. Henderson, Sistersville, West Va.

We claim the combination and arrangement of the pincer jaws, or their equivalents, with the eccentric lever, in the manner described and for the purpose set forth.

70,041.—BED-SPRING GUIDE.—Adolph C. Stich, Kalamazoo, Michigan.

I claim, 1st, The guide, Fig. 2, with spring, E, working through sleeve, C, set in slat, D, in combination with socket joint in disk, a, operating in a manner set forth and described.

2d, The ball joint in disk, a, operating in the manner set forth and described.

70,042.—MELTING FURNACE FOR THE MANUFACTURE OF STEEL.—Wm. Swindell, Allegheny City, Pa.

I claim, 1st, Constructing melting furnaces for the manufacture of steel, with iron casing or shell, lined with fire brick, substantially as and for the purposes hereinbefore described.

2d, The use, in combination with the iron casing or shell of steel furnaces, of supports for upholding the upper portion of the brick lining, while the lower portion is removed or repaired, substantially as hereinbefore described.

3d, The air-holes, i, i, around the grating at the bottom of steel furnaces to allow the air to enter between the grate bars all around, for the purpose of equalizing the combustion of the fuel within the furnace.

70,043.—VAPOR BURNER.—Dexter Symonds, Lowell, Mass.

I claim, 1st, a gas generating and gas burning lamp, constructed and arranged to operate substantially as and for the purpose specified.

2d, The insulator f, arranged and applied substantially as and for the purpose set forth.

3d, The arrangement of the tubes or pipes, G, and b, whereby the fluid is protected from the action of external heat, substantially as set forth.

70,044.—HORSE HAY FORK.—L. H. Tears, Troy, assignor to himself and Theodore Hatfield, Scranton, Pa.

I claim the combination of the hooks, A, and B, with blade, D, and crank lever, when arranged, constructed and connected together substantially as and for the purpose described.

70,045.—KILN FOR ROASTING IRON ORES.—Alois Thoma (assignor to himself, Samuel Bromberg and Artemus W. Wilder), New York city.

I claim, 1st, The arrangement of the channels, a, b, and c, within the kiln, A, B, for conducting gas and air to the ore, substantially as herein shown and described.

2d, The perforated pipe, e, when arranged in the lower part B, of the kiln, in combination with the channels, d, d, made as set forth.

3d, The process herein shown and described of roasting ore, by means of gases discharged from distant fires of any kind of fuel as described.

4th, The process herein shown and described of desulphurizing the ore, while roasting the same, by conducting water into the pipe, e, whereby the use of the steam boiler is dispensed with, and by combining the steam produced from the water with atmospheric air, as and for the purpose set forth.

70,046.—FURNACE FOR SMELTING IRON ORE.—Alois Thoma (assignor to himself, Samuel Bromberg, and Artemus W. Wilder), New York city.

I claim, 1st, Arresting the gases arising from smelting furnaces, so that they may be used for the roasting or some other process, substantially as herein shown and described.

2d, Providing a smelting furnace with two discharge channels, D, D, having suitable dam-stones, E, E, substantially as and for the purpose herein shown and described.

3d, The channels, b, b, when arranged in a smelting furnace, to retain and carry off the gases, as set forth.

4th, The shoulder, a, when formed in the charge chamber of the furnace, in combination with the channels, b, b, all made and operating substantially as and for the purpose herein shown and described.

5th, The channels, b, b, in a smelting furnace, when combined with the channels, c, blocks, or doors, d, and chimneys, e, all made and operating substantially as and for the purpose herein shown and described.

70,047.—FURNACE FOR REDUCING IRON ORES.—Alois Thoma (assignor to himself, Samuel Bromberg, and Artemus W. Wilder), New York city.

I claim, 1st, Reducing iron ore by means of gases produced from fires, the fuel of which is not in contact with the ores, substantially as and for the purpose herein shown and described.

2d, The arrangement of the structures, A, and C, connected by channels, d, and e, and with air blasts, h, substantially as herein shown and described.

3d, The arrangement in the lower part of the tube, A, of the sliding grate, or plate, f, and removable or sliding bottom, g, all made as described.

70,048.—FURNACE FOR MELTING AND PURIFYING STEEL.—Alios Thoma, (assignor to himself, S. Bromberg and A. W. Wilder), New York city.

I claim, 1st, Smelting steel in an open pan, by blowing a purified flame over the surface of the steel in the pan, substantially as herein shown and described.

2d, The pan, l, in which the steel may be smelted, is placed, when said pan is made in sections so that it can be easily inserted and removed through the narrow doors of the furnace, substantially as herein shown and described.

3d, Connecting the smelting oven, C, with the air-heating chamber, E, by means of a chamber, b, so that the air-pipe, n, is heated in the chamber, D, and not in the oven C, substantially as and for the purpose herein shown and described.

4th, So arranging a furnace for smelting steel that the steel can be tested and treated during the smelting process, substantially as herein shown and described.

5th, The chambers, C, D, and E, when connected by channels, a, and b, and when combined with the reservoir, i, blast channel, j, pan, l, and pipe, n, all made, arranged, and operating, substantially as and for the purpose herein shown and described.

6th, Making the blast channel, j, wider at its lower end, and arranging it obliquely in the furnace, substantially as and for the purpose herein shown and described.

70,049.—TOOLS FOR JEWELING WATCHES.—A. Thoma, Sen., Piqua, Ohio.

I claim the tool, B, for closing or setting jewels in watch plates, consisting of the round, hardened, cup shaped joint, C, substantially as herein shown and described.

70,050.—BARREL HEAD.—M. L. Thompson (assignor to himself and John P. Rittenhouse), Flemington, N. Y.

I claim the blocking piece, c, formed as set forth in combination with the sections c, c, and d, d, composing the head as and for the purposes specified.

70,051.—MORTISING MACHINE.—C. R. Tompkins, Rochester, N. Y.

I claim the arrangement of the adjustable spring rod, E, lever, D, reversing scroll collar, R, collared sleeve, S, with its projections i, locking bar, y, and the spring catch, t, substantially in the manner and for the purposes herein shown and described.

70,052.—TELEGRAPH INSULATOR.—John L. White, Burlington, Iowa.

I claim the combination of the cup, A, having shank, B, and hook, C, or its equivalent, when the latter is insulated from the former, and the shank of the former, coated with gutta percha, or any other suitable insulating medium or material, substantially as herein described, and for the purpose specified.

70,053.—SAFETY STIRRUP.—William Weddington, Alexandria, Ind.

I claim the foot bar, C, pivoted at a, in the ends of the bows, A, and resting upon the projecting foot bar, B, and provided with a bow A, whose upper curved end presses against the head of the stirrup when the foot is placed therein, as herein set forth for the purpose specified.

70,054.—COMPOSITION FOR TREATING BURNING FLUID.—Hiram B. Wellman, Indianapolis, Ind.

I claim a composition of soda, ash, or Epsom salts, with gum arabic, or gum tamarack, or white pine gum, and with or without alum or gum camphor, for mixing with and dissolving in carbon oil, benzine, or other hydrocarbon burning fluids, for the purposes substantially as herein before set forth and described.

70,055.—CARPET FASTENER.—George E. West and William B. Cunningham, La Fayette, Ind.

I claim the combination of the strips, B and C, with the tongue, D, all arranged with the base, A, as described, for the purpose specified.

70,056.—PORTABLE VEHICLE.—Samuel Wheelock, Conway, Mass.

1st, I claim so constructing a vehicle for ordinary purposes of conveyance, as to be enabled to dismember, or fold, or reduce in bulk, such wheeled vehicles, for purposes of packing for transportation.

2d, I claim the mode, substantially as herein described and shown, of applying the wheels to the carriage, that is by means of the arms, l l, pivoted at one end to the seat or body of the carriage, and supported at their free ends by the extremities of the spring, n.

3d, I also claim applying the spring of a vehicle or carriage to its body in such manner as to serve the purposes both of a spring and as a means of confining the wheels to the carriage and allowing of their being readily removed therefrom.

4th, I claim combining the dasher or foot rest of vehicle to its seat or body, in such manner as to allow of its being turned inward upon or over such seat, essentially as before explained.

5th, I also claim the construction and application of the top of a vehicle, in such a manner as to permit of its being lowered and folded within, or upon the seat of such vehicle.

6th, I claim the peculiar construction and arrangement as well as the application of the top, o, of the carriage, such consisting of the braces, p p, swinging feet or supporters, t t, bows, u u and v v, and straps or bands, w w, substantially in manner and for the purposes as before set forth.

7th, I claim the peculiar construction and combination with the dasher or foot rest, b, of the pole, c, as consisting of the foot, f, and handle, g, in manner and to operate as specified.

70,057.—CORD STRETCHER.—R. White, Decatur, Ill.

1st, I claim the windlass, B, supported in the frame, A, in combination with the supporter, H, when the same are constructed, arranged, and combined substantially as described, for the purposes set forth.

2d, I claim the hooks, c, in combination with the support, H, as for the purposes described.

70,058.—LUBRICATOR.—J. B. Wickersham (assignor to E. D. B. Wickersham), Philadelphia, Pa.

1st, I claim securing the glass fountain to the metallic socket and in the manner specified.

2d, A movable stem, c, constructed as set forth, in combination with the glass fountain and metal socket, g, as set forth.

3d, The wire covered with fibrous material and applied in the manner specified to a lubricator, for the purposes set forth.

70,059.—HARVESTER.—J. D. Wilber, Poughkeepsie, N. Y.

I claim the combination of a ratchet with free or independent pawls, one or more, arranged so as to operate that is to say, engage with and disengage themselves from the ratchet by virtue of their own gravity only, substantially as set forth.

70,060.—GRAIN SEPARATOR.—J. Newton Williams, Jr., St. Paul, Minn.

1st, I claim adjusting lever, D3, in combination with the staples, d, or their equivalents, to permit an independent motion of the feed board, substantially as described.

2d, Imparting a shaking motion to the feed board, D1, from the shoe, substantially as described.

3d, The supporting hangers, f, in combination with the chute board, E, substantially as and for the purpose set forth.

4th, The lever, E1, actuated by the shoe and imparting a lateral vibration to the chute board, E, substantially as described.

5th, The conveying cleats, E2 E3, arranged as described, on the chute board, to discharge the grain in a concentrated body.

6th, The tappets or knockers, S S, pivoted to and actuated by the chute board and confined below their pivots so as to jar the screen, substantially as set forth.

7th, The combination of the connecting rod, M, with the eccentric, N, on the fan shaft, and the rock, L, whereby the front end of the shoe is suspended substantially as described.

8th, The combination with the feed board, D1, of the fingers or teeth, D3, substantially as and for the purpose set forth.

70,061.—RAILWAY FROG.—James Wixted, Port Carbon, assignor to himself and H. K. Nichols, Pottsville, Pa.

I claim the steel point, d, confined to the plate, A, of a frog, and between the rails or ribs, b and b', of the same, by the wrought iron or steel strips, m m, all substantially as and for the purpose herein set forth.

70,062.—APPLE CORER AND SLICER.—G. C. Wright, Le Roy, O.

I claim in combination with the slicing device the follower, C, vertical spring, c, surrounding such follower, and the lever, E, hung to the post upon the bottom, A, all arranged as described, for the purpose specified.

70,063.—MECHANICAL MOVEMENT.—Edwin Allen (assignor to Allen Manufacturing Co.), Norwich, Conn.

I claim the gear wheel, A, constructed with one or more chords, a, whose ends are connected by irregular sections, c b c, in combination with the gear wheel, D, composed of a corresponding number of arcs, d, with irregular connecting sections, e f e, all as herein represented and described.

70,064.—WASHING MACHINE.—Daniel Arndt, Ripon, Wis.

1st, I claim the levers, E E, pins, d d, and spring, e e, with the roller, D, and its extended axle, as and for the purpose set forth.

2d, The levers, E E, pins, d d, springs, e e, and roller, D, used in combination with the box, A, provided with a cover, F, for the purposes specified.

70,065.—MACHINE FOR CROSSING BATS FOR FELTING.—Alonzo C. Arnold, Norwalk, Conn.

I claim the arrangement of the series of traveling endless toothed bands, A, and dividing rollers, F, or their equivalents, in the manner as and for the purpose described.

Also, in combination with the arm, E, and levers, N, slotted vibrating lever, G, rotating arm, H, and pin, I, as and for the purpose set forth.

70,066.—HAT FELTING MACHINE.—Jean F. Badoye, New York City.

I claim the workers, l, mounted on arms that pass through mortices in the rock shaft, f, in combination with the kettle, b, and inclines, for operating in the manner specified upon a roller containing the materials to be felted.

70,067.—PRINTING PRESS.—Henry Barth, Cincinnati, Ohio.

1st, I claim the provision of the ink table or surface, I J J', arranged to admit of a greater or less reciprocation transversely to the path of the inking rollers by means of the compound adjustable cam, G G', or its equivalent, in manner substantially as set forth.

2d, In combination with the slotted ink table, I J J', and inking rollers, P P', P'', I claim the intermittent roller or shifter, K, applied and operated substantially as and for the purpose explained.

3d, The arrangement of the frisket, Z, screw pins, z, springs, z', and cams, t t', or their equivalents, for the purpose set forth.

4th, The eccentric journaling of the roller frames, D', upon the shaft B, for the purpose stated.

70,068.—PUMP.—Frederick Bauschtleker and Barnet Vanfleet, Washington, D. C.

1st, The pump box, B, having a smooth exterior and provided with perforations, c c c, and internal annular grooves, a a a, substantially as and for the purpose specified.

2d, The combination of the valve having the two leaves and the projections with the vertical slots or grooves, l l, in the interior walls, substantially as and for the purpose described.

70,069.—CAR REPLACER.—Alfred G. Black, Wooster, Ohio.

I claim the shifting rail, E, when provided with the bolts, g, in combination with the bed piece, C, and slab rail, H, substantially as and for the purpose set forth.

70,070.—COMBINED LAND ROLLER AND PLASTER SOWER.—George F. Brock and Eli Brondige, Davisburg, Mich.

1st, I claim connecting the inner ends of the rollers, C C, to the frame, A, by means of the L-shaped metal bars, L L, and link, S, in the manner and for the purposes set forth.

2d, The arrangement of the frame, A, with the rollers, C C, bars, L L, arms, K K, ropes or chains, m m, and pulley, o o, in the manner and for the purposes set forth.

3d, The plaster distributer, G, constructed as set forth, and used in the hopper, E, with slide, H, when said hopper is connected to the rollers, C, by means of the pulleys, a and d, with their chains, b, for operating the same as specified.

70,071.—GUARD FINGERS FOR HARVESTERS.—Alfred Brown, Horatio D. Worcester, and Abram M. Griswold (assignors to themselves and B. F. Gray), Ganier, Ill.

I claim the detachable steel plate, B, provided with the flanges, c c, either with or without the sickle edges, substantially as described and for the purposes set forth.

70,072.—MACHINE FOR MAKING BASKETS.—Franklin H. Brown (assignor to himself, Edward F. Pougeot, and Lemuel H. Fiersheim), Chicago, Ill.

1st, I claim the arrangement of forms E, radiating from the shaft B, in combination with the packing device, O, as and for the purposes specified.

2d, The arrangement of ring, D, in combination with cams, H and G, slides, x, and rods, Q, as and for the purposes set forth.

3d, The arrangement of cup, Y, in combination with shaft, B, and rods, a, as and for the purposes specified.

4th, In a machine for weaving baskets, the arrangement of arm, M, shaft, B, and set screw, m, as and for the purposes set forth.

5th, In a machine for weaving baskets, the vibrating apron P', as set forth and for the purpose specified.

6th, The adjustable nut, N, in combination with the rods, O and Q, as and for the purposes set forth.

70,073.—MACHINE FOR HULLING AND SCOURING WHEAT.—Nathaniel M. Burr and William Martyn, Pawtucket, R. I.

I claim, in combination with the cone and screening cylinder, the former running inside of the latter and made adjustable in relation to it, and both inclosed in a box or case and revolving in opposite directions therein, the suction fan on the exterior of said box or case and drawing the dust, hulls, etc., from its interior through closed passages while the cleaned grain by its greater specific gravity is separated and passed off through other avenues, substantially as herein described and represented.

70,074.—WATCHMAKERS' TOOLS.—John M. Cayce, Franklin, Tenn.

I claim the instrument above described having blades, a a, the guide, B, and the gage screw, C, substantially as and for the purpose specified.

70,075.—SELF-ADJUSTING WHIP HOLDER.—H. M. Curtis and A. Worden, Ypsilanti, Mich.

We claim the shape and construction of the whip holder and the connection of the two sectional halves by hinges or joints in such a manner as to hold the whip when inserted closely and firmly by clasping the same at the top and bottom of the holder at the same time, the holder being formed of metal, cast or pressed into proper shape, substantially as and for the purpose set forth and described.

70,076.—METALLIC PAVEMENT.—Jeremiah Dean, West Roxbury, Mass.

I claim the construction and arrangement in all its parts, of a metallic pavement, as described.

70,077.—WATER BACK AND GRATE OF COOKING AND HEATING STOVES.—George Dervey, Blooming Valley, Pa.

1st, I claim a cookstove provided with a water and steam jacket around the sides, back and bottom of the fire box, substantially as and for the purpose described.

2d, The combination of the hollow grate bars, T, with the water and steam jacket, as described.

3d, The heating pipe, P, with its bent part, I, which latter forms a shelf in the bake oven, H, and supplied with steam from the boiler, D, arranged and operating substantially as described.

4th, The pipe, G' P and P2, arranged substantially as described and the latter connected to the steam jacket of the cooking stove, for the purpose of heating the rooms by means of the cooking stove.

5th, Passing the pipe through which the steam is led into the different rooms in the shape of a coil through the chimney or stove pipe, after leading, it around one room and before passing it into the next, substantially as described.

6th, The elastic pipe, N, attached to either a stop cock on the boiler, D, or the spout of the teakettle and leading into the bake oven, substantially as and for the purposes described.

7th, The combination and arrangement of the fire box, B, pipes, H, port, G, pipe, G1 G3, and hollow bake oven, H, substantially as and for the purpose described.

70,078.—BOOT AND SHOE HEEL.—Christopher Dyer, Jr., and Ellis Drake, Stoughton, Mass.

We claim a heel having the following characteristics: a body, A, constructed of wrought metal, a cast metal tread, C, and screws, D, adapted to be applied to a separate shank, F, having lug or nut, E, whereby the parts are held together independently of any other fastenings, as herein described.

70,079.—MANUFACTURE OF HORSE COLLARS.—E. P. Edstrim, Somerville, Mass.

I claim the improvement in the manufacture of horse collars by forming a core and applying thereto the roll and body leather upon a system or series of blocks, substantially as set forth.

70,080.—CORN CRIB.—N. T. Fitch, Forsyth, Ill.

I claim, 1st, The method or plan substantially as herein described of constructing corn cribs whether the same consist of one single crib or of two or more united, as shown and described.

70,081.—COMBINED KNOB LATCH AND LOCK.—M. B Foote (assignor to himself and E. N. Foote), New England Village, Mass.

I claim the latch bolt, B, having the wide slot herein described and having in one of the walls of that slot a mortise to receive the bolt of the lock, D, substantially as and for the purpose specified.

70,082.—WASHER FOR AXLE BOXES.—Walter K. Foster, Cambridgeport, Mass.

I claim the combination and arrangement of one or two metallic annuli or guards or flanged rings with a leather washer, or its equivalent, arranged within said rings, and used on an axle journal in manner as set forth.

I also claim the flanged guards as made with lips on their inner ends and outer circumferences to receive a washer, as specified.

70,083.—PADDLE WHEEL.—William Goodwin, Boston, Mass.

I claim my improved arrangement of the boats or paddles of the two series substantially as described and represented.

I also claim the combination and arrangement of the openings, s, in the several paddles or floats with the two series of paddles or floats, arranged together as specified.

70,084.—PADDLE WHEEL.—William Goodwin, Boston, Mass.

I claim as my invention the wheel or combination as composed of the three forms, A B E, made as described and of the two series of paddles, C D, having the paddles of each series arranged obliquely in the wheel and diagonally and in other respects with regard to those of the other series as explained and also having each pair, C D, of such paddles united at their middles to one of the spokes or arms of the intermediate frame, E, the whole being substantially as specified.

70,085.—PROCESS OF REMOVING BURRS AND OTHER SUBSTANCES FROM WOOL.—William A. Govern, Norwalk, Conn.

I claim treating wool for the removal of burrs and other vegetable matter therefrom, by the process substantially as herein described and set forth.

70,086.—STEAM GENERATOR INDICATOR.—D. M. Greene (assignor to Maria N. Green), Washington, D. C.

1st, I claim the combination of steam pipe, P, stationary rod, R, levers, L L' and L", connected by the rods, R' and R," arranged substantially as described.

2d, The steam pipe, P, stationary rod, R, levers, L and L', valve, v, and the whistle, W, arranged substantially as set forth.

70,087.—SURGICAL CUP.—George Hadfield, Cincinnati, Ohio.

I claim the arrangement of a flanged cup, A C, and grooved, broad and flexible lip, D E, as set forth.

70,088.—SURGICAL CUP.—George Hadffeld, Cincinnati, Ohio.

I claim the provision for surgical cups of the broad, flexible and impervious lip, E e, formed and adapted to operate in the manner described.

70,089.—SAFETY BRIDLE.—F. A. Hannaford, New York City.

I claim, 1st, The supplemental strap, C, arranged upon the bridle, A, and in relation with the bit, B, thereof, substantially as and for the purpose specified.

2d, The stops, f, made adjustable upon the supplemental strap, C, substantially as set forth whereby the force exerted upon the bit may be limited and rendered uniform, as described.

70,090.—FRAME-WORK FOR FIREPLACES.—James L. Henderson, Covington, Ky.

I claim, 1st, So arranging the frame for supporting the hearth that the latter shall rest upon a horizontal flooring, E, supported upon joist extending entirely across the hearth space either longitudinally or laterally, substantially in the manner set forth.

2d, Framing around the hearth and fireplace of buildings with single head and side trimmers and extending the joist under the hearth so as to dispense with the trimmer arch and brick arch, substantially as set forth.

3d, The mode of connecting the tail joist, C, with the breast of the chimney by metallic shoes, F, substantially as set forth.

70,091.—HORSE SHOE.—J. W. Hodges, Baltimore, Md.

I claim the combination with the calk, B b, as a means for attaching the same to the shoe, of the wedge, C, and pin, d, substantially as described.

70,092.—MANUFACTURE OF SOAP.—Nannie W. Hunter, Elizabeth city, N. C.

I claim the above described improvement in making "hand soap."

70,093.—ANIMAL TRAP.—B. Illingworth, Freeport, Ill.

I claim the arrangement of the box, A, as constructed with the door, C, plate, J, spring, o, bar, F, and rods, H and I, the several parts operating in the manner and for the purpose set forth.

70,094.—LAMP SHADE SUPPORTER.—G. C. James, Cincinnati, Ohio.

I claim a lamp shade supporter, A, constructed with wings or projections, a, of one continuous piece of wire as described and for the purpose set forth.

70,095.—BUTTER STAMP.—N. L. Janney, (assignor to himself and H. J. Kutz) Philadelphia, Pa.

I claim the expansion mold, A, when constructed and arranged as described and for the purpose set forth.

70,096.—WASHING MACHINE.—G. H. Kidney, Cleveland, Ohio

1st, I claim the combination of the cords, I, with the blocks, c, when constructed and arranged in relation to each other so as to be interwoven or interlocking forming a continuous or entire connected apron substantially as and for the purpose set forth.

2d, The arrangement of the apron, C, in combination with the cylinder, B, in the manner and for the purpose substantially as specified.

70,097.—FENCE.—J. E. Layton, New Wilmington, Pa.

I claim the posts, A and B, provided with supports, e and i, for the rails, s said posts being secured to the base, C C', by means of keys 1 and 2 the whole being constructed, arranged and operating substantially as herein described and for the purpose set forth.

70,098.—WHEEL AND AXLE FOR CARRIAGES.—J. H. Lewis, Duxbury, Mass.

1st, I claim the radial flanges, M, in combination with the plate, d, the lugs, m, and the wheel hub, substantially as described.

2d, The arrangement of the spring, f, in combination with the plate, d, and the wheel hub substantially as described.

2d, I also claim forming the band, n, together with and in and piece with the journal box, substantially as described.

70,099.—CURTAIN FIXTURE.—Thos. Lyons, (assignor to himself and J. B. King), Brooklyn, N. Y.

I claim the tension spring constructed as described and arranged in relation with the stud, m, the side, C, and the frame, A, substantially as and for the purpose specified.

70,100.—SEED PLANTER.—J. L. Manlove, Connersville, Ind.

1st, I claim the combination of the furrowing runners, A, shovels, B, oscillating braces, C, lever, C', and a hook or other equivalent fastening, E, for the same, arranged to operate substantially as set forth.

2d, In combination with the foregoing parts for covering the seed the hoppers, K, slide, F, with the adjustable openings, F', and cross piece, H, arranged to operate substantially as set forth.

70,101.—SIPHON PROPELLER.—John Marquis, San Francisco, Cal.

I claim the propelling of a vessel by water raised to any hight that can be acquired by means of a steam or hot air siphon or its equivalent the fall of the water from the hight being the propelling power either by its own weight and velocity or pressure substantially as described.

70,102.—GRATE.—Julius Meissner, New York City.

1st, I claim a grate having a shelf or other equivalent provision arranged in such relation to the lower grate bars as to enable the fresh fuel to be introduced into the grate below the incandescent portion of the mass which is supported upon said lower grate bars substantially as described.

The curved plate, G, or any equivalent thereof as a means for directing upward the incandescent fuel which is displaced in the act of introducing fresh fuel substantially as and for the purpose described.

3d, In a grate in which the fuel is supplied from below, I claim a congeries of curved or straight front grate, joined or attached to a common support at their upper ends, substantially as and for the purpose specified.

70,103.—CAR COUPLING.—Jacob Miller, Carrollton, Ohio.

1st, I claim, in the above described coupling device, the pivoted tumbler, C, acting independently from the check pieces, C', substantially as and for the purposes set forth.

2d, The combination of the pivoted tumbler, C', spring plunger, D, check pieces, C', provided with lever, E, and pin, c, and the movable frame, G, acted upon by the spring plunger, H, substantially as and for the purposes described.

70,104.—CALENDAR FOR WATCH CASES.—James D. Moore, Grinnell, Iowa.

I claim a watch case provided with the movable ring, x, and stationary ring, z, with their letters and figures arranged in the manner substantially as and for the purposes specified.

70,105.—BUCKLE ATTACHMENTS.—Robert T. Morse, Cambridge, Ohio.

I claim the slotted metal plates, A, A, constructed as described, for attaching buckles to the ends or sides of straps, and shielding the edges of the leather as set forth.

70,106.—SAWING MACHINE.—George L. Mowry, Scott, N. Y.

I claim the double ratchet clamps, a a', when arranged upon the movable table, C, and operated by the lever m, whereby wood of uneven widths may be securely held and adjusted to the saw, substantially as set forth.

70,107.—CARD RACK.—G. A. Nelson, Chicago, Ill.

1st, I claim the metal strips, D, having the clips, d, formed thereon by punching, or cutting the latter therefrom in the manner substantially as shown and described.

2d, I claim securing the strips, D, constructed as described, to the slats or case by inserting the edges of the strip into grooves, f, substantiall as described.

3d, The turning slats, A, A, marked by letters of the alphabet, and constructed as described, in combination with strips, D, D, and the stationary board, E, or boards, n, n, arranged as described, the whole arranged substantially as herein set forth, and for the purposes specified.

70,108.—POTATO DIGGER.—H. B. Norton, Rochester, N. Y.

1st, I claim the combination and arrangement of the frame, C, resting loosely on the axle, the guide arms, h, the jointed arms, n, the endless apron, I, and the levers, K and L, the whole operating in the manner and for the purpose herein set forth.

2d, The combination of the catch arrangement, s, t, with the loose frame, C, and guide arms, h, operating as and for the purpose specified.

70,109.—SWITCHES.—William P. Patton (assignor to himself, Theo's Weaver and Isaac Lloyd), Harrisburg, Pa.

I claim a lock so constructed as that the key can only be withdrawn when the bolt is completely thrown, when the same is used in combination with the operating mechanism of a railroad switch, and so arranged in relation to the bolt holes as that the bolt can only be entirely thrown when the switch is in connection with the main track, substantially as set forth.

70,110.—MACHINE FOR RENOVATING FEATHERS.—John S. Peasley, Providence, R. I.

1st, I claim constructing the cylinder for holding the feathers to be remounted in two parts, with means for uniting and securing the same together substantially as and for the purpose specified.

2d, I claim combining with a cylinder for the purpose specified, or an equivalent receptable, a number of netted openings, l, and suitable battens, E, or coverings therefor, with suitable means for securing the same substantially in the manner and for the purpose specified.

3d, I claim the tubular arms constructed substantially as described and provided with a number of steam cocks, f, f, the whole being arranged with suitable means for introducing steam thereto, and through the same into the cylinder and among the feathers therein, substantially in the manner and for the purpose specified.

4th, I claim the steam coc, k J, in combination with the said tubular arms, and a suitable conducting pipe, K, as described and for the purpose specified

5th, I claim connecting one of the tubular arms, G, to the shaft, in such a manner, by means of a coupling, or equivalent device, that the said arm may be readily detached from the shaft, as described, for the purpose specified.

70,111.—CULTIVATORS.—Ezra Peck, Chicago, Ill.

1st, I claim a framework for carrying and drawing the plows of a straddle row cultivator, supported on runners, substantially as described.

2d, The frame supported on runners in combination with two gangs of plows, substantially as specified.

3d, The main frame, supported on ranners in combination adjustable and movable beams, F, and plows, Q, substantially as and for the purpose specified.

4th, The slotted clevis, m, provided with an upper and a lower bearing, substantially as specified.

5th, The slotted clevis, m, in combination with the rod, N, and plow beam, F, substantially as described.

6th, The combination and arrangement of the angle rod, N, and clevis, m, with the adjustable brace, K, for adjusting the elevation of the front end of the beams substantially as specified.

7th, The angle rods, F, in combination with the slots, a, and clamps, g, for adjusting the distance between the ends of the beams, substantially as described.

8th, The combination and arrangement of the evener, G, inclined swing bars or levers, I, rods, J, and elevated pivoted supports, f, substantially as specified.

70,112.—CHUCKS.—B. W. Pierce, New Bedford, Mass.

I claim the within described chuck, constructed and operating substantially as set forth.

70,113.—APPARATUS FOR SPOOLING THREAD.—Alfred S. Phillips, South Boston, Mass.

I claim the arrangement as well as the combination of the two rollers, B, D, the frame, A, the adjustable bars, C', C', provided with notches, or teeth, h, and pawls, l, as described, the slider, E, and its guide, k, and the cranked shaft, F, the whole being substantially as specified.

I also claim the combination of the movable journal, m, with the cranked shaft, F, and its stationary journal, l, as set forth.

70,114.—STARTING AND STOPPING CARS.—Job Phillips, Dan'l W. Southwick and David A. Arnold, Pawtucket, R. I.

1st, I claim combining the draft hook, H, with the axle of the car by means of a chain gear, C, eccentrics, A, A', and a pawl and ratchet mechanism, substantially as described for the purposes specified.

2d, The combination and arrangement of the slide rod, D, under the control of the driver, with the draw-bar, B, and holding catch, k, substantially as described

70,115.—LIFTING JACK.—Oliver L. Pinney, Brunswick, O.

I claim the lever, D, wheel, E, and toothed piece, H, in combination with the link, I, substantially as set forth.

70,116.—FRAME FOR PICTURES, &c.—Chas. P. Poinier, (assignor for himself and Charles O. Horton), Boston, Mass.

1st, I claim the combination of the fixed and detachable frames, A and E, in the manner and for the purpose substantially as specified.

2d, The combination of the frame, E, glass, G, and the hinged backboard, J, when constructed and operating as and for the purpose set forth.

70,117.—APPARATUS FOR BURNING HYDROCARBONS.—H. A. V. Post and Jeptha Garrard, Cincinnati, Ohio.

We claim the arrangement of a receptacle, C, for hydrocarbon or other liquid fuel below a furnace or combustion chamber, B, in connection with a pipe, or pipes, through which air or air and steam is forced through apertures or nozzles situated below the surface of the liquid fuel, and thence through the body of the liquid fuel, substantially as and for the purpose set forth.

70,118.—WASHING MACHINE.—Charles C. and James Purington, Bath, Me.

We claim the combination as well as the arrangement of the guide bars, g, g, the two sets of rails and their wheels, with the tub, its series of rollers and the dasher and its rollers, the whole being substantially as specified.

70,119.—HYDRANTS.—Joshua Regester, Baltimore, Md.

I claim the removable divided bottom, g, g, in combination with the removable section A', applied to a wooden hydrant case, substantially in the manner and for the purposes described.

70,120.—COTTON AND CORN PLOW.—D. C. Richardson, Weldon, N. C.

1st, I claim the plate, D, cast with the standard in combination with the adjustable tooth, substantially as described.

2d, I claim the plate, D, cast in the standard, in combination with the adjustable wings, W W, substantially as described, for the purposes set forth.

3d, The shoe, S, having in rear of the mold plate a slot, s, in which wings, R R, of different sizes and form can be secured, when the same is in combination with wings, W W, the whole constructed and combined substantially as set forth.

4th, I claim the devices embraced in the foregoing claims, when the same are arranged in the manner described, and for the purpose set forth.

70,121.—LIFE PRESERVER.—R. Robinson, San Fr'cisco, Cal.

I claim the frame, A, provided with air tight compartments, and a flexible case for the legs, body and arms, and having a seat, D, and opening, F, all substantially as described.

70,122.—HOISTING APPARATUS.—J. F. Rochow, N. Y. city.

I claim the crank shaft, C, carrying pinions or cog wheels, H I, in combination with the gear, E, and internal gear, K, all constructed and operating substantially as and for the purpose set forth.

70,123.—STONE CHANNELING MACHINE.—Henry J. Ruggles, Poultney, Vt.

1st, I claim the employment of an air cylinder, S, in combination with drills or cutters, substantially as and for the purpose herein specified.

2d, I also claim the combination of an air cylinder, or cylinders, one or more drills or cutters, and a truck or carriage moved automatically over the rock or stone, to be channeled or cut, substantially as herein specified.

3d, I also claim the combination of an air cylinder or cylinders, one or more drills or cutters, steam engine, or other motive power, a truck, or carriage, on which the operating parts are mounted, and an automatic device for moving the truck along in either direction, substantially as herein set forth.

4th, I also claim a drill, or set of drills, composed of single drills, of the different kinds of points or cutting parts, substantially as and for the purpose herein specified.

5th, I also claim, in combination with the drill, the drill clamp, or stock, T, constructed substantially as described, so as to enter the channels, and serve as a guide and support for the drills therein.

6th, I also claim the arrangement of the ways, Q Q, in which the air cylinders and drills are guided, so as to be adjusted and set, either vertically or inclined, in the planes of the channels, substantially as herein set forth.

70,124.—PESSARY.—T. C. Sachse, Chicago, Ill.

1st, I claim the oblong concave face of the bowl, A, of a pessary, substantially as and for the purposes described.

2d, The curved part, B', of the stem, B, forming an automatic means of holding the instrument in position, substantially as and for the purposes set forth.

3d, The auxiliary stem, C, with its curved part, C', opening, d, and square lower opening, moving within the stem, B, substantially as and for the purposes described.

4th, A pessary substantially as described, operated by a key, D, substantially in the manner set forth.

70,125.—LAMP EXTINGUISHER.—Lucius M. Sargent (assignor to W. A. Richardson, Henry D. Ward, and George A. Gates), Worcester, Mass. Antedated Oct. 19, 1867.

1st, I claim the arrangement of the wings, e, and stems, d, upon the base plate, c, construed as described, to be placed over the wick tube, a, and secured upon the central portion, b, of the base of the burner, substantially as and for the purpose herein set forth.

2d, The stud or stop, e', in combination with the wings, e, arms, d', and spring, i, substantially as and for the purpose herein set forth.

3d, The combination of the downwardly extending arms, d', operating the wings, e, with the spring, f, and spring catch, g, substantially as and for the purpose specified.

70,126.—GRAIN ELEVATOR AND FEEDER.—Benjamin F. Sherman, San Francisco, Cal.

I claim the elevator feeder described, arranged at the lower end of the elevator, and operated by the gear, D, on the lower pulley shaft of the elevating belt in combination with the gears, E F and G, so constructed and arranged that the feeding may be swung around in the arc of a circle, to bring it to the grain to be fed to the elevator.

2d, Lenghtening or shortening the saw feeder, by taking out or putting in the extension pieces, H' and H', substantially as described.

70,127.—EXTENSION TABLE SLIDE.—A. P. Shute, and J. F. Jackson, Charlestown, Mass.

We claim the combination as well as the arrangement of the metallic slips, D D' D'', with the grooves, E E', and the bars, A B C, made substantially as described, and for the purpose set forth.

70,128.—HANGING TOP TO BUGGIES.—Cephas Smith, Stockbridge, Mich.

I claim the bar, B, and C, constructed and used with the slotted plate, G, as and for the purpose set forth.

70,129.—JOINT BIT AND CHECK.—Robert D. Sterling, New York City.

I claim the straps, n, suspended from the top ring, e, and connected to the loop ring, J, sliding on the linked bit, a b c, constructed and operating as and for the purpose described.

70,130.—MEANS FOR PROPELLING VESSELS.—R. R. Stevens, Mokelumne Hill, Cal.

I claim the combination and arrangement of the cams, D D and D' D', with the frames, H and G, and cranks, F and F', constructed and arranged to operate the paddles, P, as described.

70,131.—CAR COUPLING.—John Swan, Baltimore, Md.

I claim the drawhead, A, as constructed in combination with the trigger or pin, C, pivoted within or to the said drawhead and provided with the hinged bar, D, the several parts being used and operated as and for the purpose specified.

70,132.—TELEGRAPH INSULATOR.—D. W. Teller and W. L. Savage, North Greenwich, Conn., assignors to themselves and W. H. Hoag, New York City.

We claim the insulator constructed in sections substantially as described, to be inserted in an aperture or bearing in its support, by means of a slot provided in the latter communicating with said aperture or bearing, essentially as and for the purpose or purposes herein set forth.

70,133.—ANIMAL TRAP.—Joseph Trainer, Rural Dale, Ohio.

I claim the combination and arrangement of the chambers, A B, gates, a b, gords, r r, lever, L, vertical hinged rod, M, platform, D, and connected rods, H and e, all constructed, combined, and operating together substantially in the manner and for the purpose specified.

70,134.—ANIMAL TRAP.—C. S. Trevitt (assignor to himself and H. E. Wentworth), Washington, D. C.

1st, I claim the swinging bait box, H, having the cover, h', and the aperture, i, substantially as and for the purpose specified.

2d, The combination of the adjustable weight, w, rod, E, trap door, E, box, H, and notched rod, k, substantially as and for the purpose described.

70,135—MANURE FORK.—Wm. Truby, Brush Valley, Pa.

I claim the combination of the springs, e and g, provided with catches, f and h, with the hinges, c c', of the tang, b, and plate, A, of a manure or other fork, said plate being provided with a slot, k, counter catch, l, and rib, t, all combined and arranged substantially as and for the purpose set forth.

70,136.—COOLER FOR WATER, MILK, BEER, ETC.—Charles M. Vail, Elmira, N. Y.

I claim in combination with an internal vessel for containing the fluid to be acted upon, an external casing with intermediate air spaces, with a double cover and connecting ventilated cylinder, said parts being perforated and arranged in relation to one another substantially as set forth.

70,137.—INSTRUMENT FOR CUTTING POST HOLES.—N. S. Vance and E. Watkins, Decatur, Ill.

I claim an instrument for cutting post holes formed by a combination of the tubular cutter, A, constructed as described, with the handle, B, plunger, D, rods, E, collar, F, and spiral spring, G, substantially as set forth.

70,138.—STOVEPIPE DRUM.—Jerome C. Ward, Bergen, N. Y.

I claim the combination of the two elongated dampers, B B, connected by rod, b, with the drum, A, without partitions, the whole operating in the manner and for the purpose specified.

70,139.—MACHINE FOR SHAPING BOOT HEELS.—George W. Warfield, Hudson, Mass.

I claim, 1st, The employment of the revolving cam plate or former, p, for the purpose both of supporting the heel and giving the required outline to it under the action of the rotary cutter, substantially as hereinbefore described.

2d, I claim in combination with such cutter, B, and in a machine for trimming boot heels, the fender or ledge, b3, applied to the cutting carriage, C, as set forth and explained.

3d, I claim the construction and mode of application of the clamp plate, l, in manner and operated by the treadle, J, as before explained.

4th, I claim the peculiar construction of the former, p, as composed of the oval shaped plate for giving the necessary movements to the cutter carriage, C, and of the stop or abutments, p', as and for the purpose set forth.

5th, I claim the general combination and arrangement of the machine as herein shown and described, consisting of the revolving cutter, B, the former, p, and the clamp, l', these several parts being operated by their respective mechanisms in manner as before referred to and explained.

70,140.—BLOWER FOR FORGES.—C. West and B. K. Price, Pittsburgh, Pa.

1st, We claim the combination of a forge, supply pipe, and fan, when the latter is arranged in a box as shown, and is operated by means of a fly gear and pinion wheels, the whole being constructed, arranged, and operating substantially as described and for the purposes set forth.

2d, The combination of the forge, supply pipe, and fan box, when the latter is constructed with a movable top and side openings, as shown, and the whole are so arranged that, acting on the principle of the ordinary chimney flue, they will secure to the forge a continuous current of air, substantially as described.

70,141.—BREECH-LOADING FIRE-ARM.—Luke Wheelock, New Haven, Conn.

I claim the spring, E, in combination with the breech block, C, and arranged so as to be depressed by the insertion of the cartridge, and when the cartridge is inserted to immediately raise the block so as to prevent the accidental removal of the cartridge.

70,142.—MOTOR FOR OPERATING SEWING MACHINES.—Robt. Whitehill, Jr., New York City.

1st, I claim the combination, for simultaneous joint action by one and the same motion or application of force, of a spring clutch and yielding or spring brake, as a means of stopping or starting and varying the speed of a secondary shaft relatively to a prime mover traveling at a uniform velocity, substantially as specified.

2d, The spring clutch, I, constructed essentially as described, of hinged leaves, d, acted upon by springs, e, and operating in concert with a conically recessed pulley, H, as herein set forth.

3d, In combination with the treadle, J, the brake, K, provided with a spring, M, and controlled by stops or projections of, from, or through a connecting rod or sliding bar, l, substantially as shown and described.

70,143.—PITMAN HEAD AND WRIST PIN.—Wm. N. Whitely, Springfield, Ohio.

1st, I claim the solid head, B, provided with a conical box, as set forth, in combination with the tubular wrist pin, C, all constructed and operating as set forth.

2d, The recessed nut, D, in combination with the wrist pin, as and for the purpose set forth.

70,144. — FLOORING, PAVING TILE, AND BUILDING BLOCK.—Wildrich Winterhalter (assignor to himself and John McArthur, Jr.) Philadelphia, Pa.

1st, I claim a paving or flooring tile or building block, composed of pulverized bricks, and ordinary brick clay, mixed together, molded, subjected to pressure, and burnt, as set forth.

2d, Combining with the said tiles or blocks, an outer coating of pulverized quartz and brick powder, as set forth.

70,145.—CAR BRAKE.—James F. Wood, 2d, Cohocton, N. Y.

1st, I claim the arrangement of the two right angle levers, so connected together, that they form a knuckle joint bearing on the center of the brake bars, operating in the manner substantially as and for the purposes herein set forth.

2d, I claim the adjustable links, d d, and the sliding suspension rods, b b, as arranged for the purposes herein described.

70,146.—IRONING TABLE.—Asa T. Woolsey, Sandusky, Ohio.

I claim the standards, B', cross bar, C, and cord, E, in combination with the board, b, having a horizontal and vertical adjustment, substantially as and for the purpose set forth.

70,147.—MANUFACTURE OF POSTAGE STAMPS.—Charles F. Steel, Brooklyn, N. Y.

1st, I claim a postage stamp, or equivalent printed paper, having the paper partially broken, opened, and weakened, along the lines, m, substantially as and for the purpose herein set forth.

2d, I claim in the above applying the gum or equivalent adhesive material before such treatment of the paper, as and for the purposes herein specified.

3d, I claim, in combination with the above steps, the flattening of the whole, or a portion of the surface of the paper, prior to the printing operation, as and for the purpose herein explained.

4th, I claim leaving a space, B, which is embossed and partially broken, as indicated, and not flattened or printed, substantially as and for the purpose herein specified.

REISSUES.

2,781.—MODE OF APPLYING SULPHUROUS ACID GAS IN THE DEFECATION OF SACCHARINE LIQUIDS.—Nancy Poindexter Brashear, Pattersonville, La., executrix of the estate of Robert B. Brashear, deceased. Patented Dec. 6, 1859.

1st, I claim the use of the fumes of burning sulphur, or sulphurous acid gas, in the treatment of juices containing saccharine matter, substantially as described.

2d, Subjecting sugar cane juice or other saccharine liquid to the direct action of the fumes of burning sulphur, such liquid being employed in a diffused state, or in such manner treated that it will be thoroughly impregnated with the fumes of sulpaur, substantially as described.

2,782.—SEEDING MACHINE.—Hiram L. Brown and Calvin P. Brown, Shortsville, N. Y., assignees of Gilbert Jessup. Patented June 25, 1861.

1st, We claim the shaft, G, of the vertical disk distributers of seeding machines, when constructed with a rim or flange, j, for carrying the grain over the wheel from the hopper to the drill teeth.

2d, So constructing and arranging the distributing cases and wheel in this class of seed drills that either of two openings, H and D, may be used alternatively for feeding different kinds of grain, substantially as described.

3d, So constructing and combining the distributing wheel, G, and casing, A B, that the grain may be carried by the wheel from either of the two openings, C and D, and discharged through channels of different sizes, adapted to larger or smaller grain, substantially in the manner set forth.

4th, The mode, substantially as set forth, of giving the requisite play to the wheel, G, by hanging it loosely on a shaft not round, and supporting it on the casing by means of a hub or boss.

5th, So constructing the exterior or interior faces of the flange, f, that by means of irregularities upon the surface thereof, the grain may be carried with the revolution of the wheel, substantially in the manner set forth.

6th, The combination of the casing, A and B distributing wheel, G, and partition, P, substantially as and for the purpose set forth.

7th, The casing, A B, constructed in two pieces, with horizontal flanges, f, for attaching it to the hopper, when used in combination with a vertical distributing wheel, G, substantially in the manner set forth.

2,783.—REAPER AND MOWER.—Robert T. Campbell, Washington, D. C., assignee of Thos. I. Stealey. Patented Dec. 15, 1857.

1st, I claim the main frame of a harvestur which carries the gearing to drive the cutters, and to which frame the tongue is attached, said frame being carried by two driving and supporting wheels and having the finger bar and platform hinged to it so as to rise and fall at the outer end above and below the plane on which the driving wheels run, in combination with a rake moving over the platform at intervals, and discharging the cut grain at the inner side of the platform and out of the path of the team in cutting the next swath.

2d, In a harvester with a finger bar and platform hinged to the draft frame thereof so as to rise and fall above at the outer end above and below the plane on which the driving wheels run, I claim applying the pivot or fulcrum of the rake and its guide to the finger bar and platform, so that the rake will work in unison with the finger bar and platform through all the vibrations of the finger bar and platform.

3d, In combination with a harvesting machine having two driving and supporting wheels which carry the main frame with a finger bar hinged to said frame, so as to rise and fall at its outer end above and below the plane on which the driving wheels run, I claim the removable platform and self-raking attachments and the other reaping fixtures, which when removed convert the reaper into a mower.

4th, So combining a two-wheeled draft frame, a hinged platform, rake teeth, and reel bars, that the rake teeth and reel bars are wholly to one side of the draft frame, substantially as described.

5th, A finger beam of a combined reaper and mower hinged to and suspended below the draft frame by means of a jointed connection which allows of its outer end rising and falling above and below the plane on which the driving wheels run, and by which its inner end can be raised or lowered to adapt the cutting apparatus for reaping or mowing, in combination with an auxiliary suspending and bracing jointed or flexible connection which is adjustable and will hold up and brace a grain platform at its inner side and in rear of the hinge of the finger beam, when the machine is used as a reaper, and will brace the cutting apparatus while the machine is used as a mower substantially as described.

6th, The combination in a two-wheel side draft combined reaping and mowing machine, of a laterally projecting hinged cutting apparatus which rises and falls at its outer end above and below the plane on which the driving wheels run, a platform for receiving the cut grain, and a toothed rake which discharges the cut crop in gavels from the platform at the inner side thereof.

7th, A harvesting machine with its cutting apparatus hinged so as to be on one side of a two wheeled draft frame and so as to rise and fall at its outer end above and below the plane on which the drive wheels run, when such machine is constructed so as to be capable of serving either as a mower or as a combined reaper, mower, and self-raker, substantially as set forth.

8th, A harvester with a two-wheel draft frame which has one of its wheels connected to the main axle by means of a spring pawl and a ratchet, or equivalent devices, which will allow and cause it automatically to become a

loose or fast wheel on said axle, in backing the machine or turning it around corners, and with the shafts of its gearing for driving the sickle arranged below the main axle, with said axle and said gearing below its main frame and with its finger beam hinged to it in such a manner as to make it a front cut machine, and so that the outer end of said finger beam may rise and fall above and below the plane on which the driving wheels run, and provided with an auxiliary rear supporting brace attached to the platform or finger beam, so that the same is braced against the resistance of the crops as the machine moves forward, substantially as set forth.

9th, A front-cut harvesting machine which can be used either as a mower or as a self-raking reaper, such machine having a laterally projecting hinged cutting apparatus and having a rake which discharges the cut crop in gavels from the inner side of the platform.

2,784.—PULLEY ATTACHMENT FOR RAISING WEIGHTS.—Geo. W. Gregory, Watertown, N. Y. Patented Aug. 14, 1866. Antedated Feb. 14, 1866.

1st, I claim the adjustable pulley support having one or more sockets or their equivalents, by and through which the pulley support may be operated and changed from place to place, for the purpose set forth

2d, An adjustable pulley support provided with means for changing the same from place to place and with means for operating the pulley.

2,785.—CARBURETING GASES.—Henri L. Stuart, New York City, assignee of C. M. Williams. Patented Jan. 8, 1867.

1st, I claim carbureting gases by mixing or combining with them the vapors of a volatile hydrocarbon liquid before it is introduced into the service mains for distribution, substantially as described.

2d, I also claim the devices and means herein shown and described for carbureting gases in the holder before its distribution to the service mains.

2,786.—PERMUTATION LOCKS.—Geo. Thompson and Henry Mitchell, Trenton, N. J. (assignees of A. W. Johnson, and George Thompson), Patented May 21, 1867.

1st, We claim the notched disks or tumblers, M, each having a tube, O, fixed to it the outer end of which is provided with teeth to engage with similar teeth on the hubs or flanges, d, of the graduated rings, Q, substantially as and for the purpose herein shown and described.

2d, Attaching the rod or bolt, R, to the back plate of the lock, by means of a nut, T, to facilitate the permutation of the index or opening letters, and also to more effectually preserve the connection of the ring, Q, with their respective tubes, O.

2,787.—ENVELOPE MACHINE.—H. C. Berlin and Geo. H. Jones, New York, (Assignees of Thomas V. Waymouth). Patented Sept. 25, 1866.

1st, We claim gumming the seal flaps of the blanks for envelopes at or about the same time with the lower or end flaps, after the blanks are placed in the machine and before they are folded, by mechanism substantially such as described or any other suitable mechanism to produce the same effect, for the purposes set forth.

2d, The arrangement of a curved guide, T, in combination with the table supporting the blanks, substantially as and for the purpose set forth.

3d, Causing the seal flap, while being folded to bear on one or more of the other folding wings, or on parts or projections of said wings, or any device or mechanism interposed between the seal and other flaps and producing the same effect, substantially as and for the purposes set forth.

4th, The combination with mechanism adapted to gum the seal and other flaps of envelope blanks of a folding mechanism so arranged and operating as to prevent the seal flap being brought in contact with the other flaps or parts of the blank and adhering thereto.

5th, The protecting lips, P, in combination with the folding wings constructed and operating substantially as and for the purposes set forth.

6th, The raised or projecting surface at or near the edge of the wing which folds the lower flap of the blank substantially as and for the purposes set forth.

7th, The endless apron, A, with its radiating arms in combination with a suitable gumming and folding mechanism constructed and operating substantially as and for the purposes set forth.

8th, Passing the endless apron, C, at its receiving end over a square or polygonal shaft substantially as and for the purposes set forth

9th, In combination with the endless apron, Q, the rail, a', or its equivalent substantially as and for the purposes set forth.

10th, The combination with a suitable mechanism for gumming the flaps of envelopes and folding the envelope blanks, of an endless apron as described or any equivalent device or mechanism for receiving the envelopes after they are folded and moving or supporting the same, without compression, until the gum on the seal flaps is dried.

11th, In combination with the endless apron, Q, or its equivalent the receiving box, R, and follower, S, constructed and operating substantially as and for the purpose set forth

12th, The lever arm, O, in combination with the carrying platform, N, and a suitable die inserted in or attached to said lever or to the platform, or to both, substantially as and for the purposes set forth.

13th, The arrangement of dies, s, on the creasing plunger and on the folding table or on either substantially as and for the purpose set forth.

14th, The types, u, arranged in an arm and operating in combination with the folcing table and creasing plunger substantially as and for the purposes set forth.

2,788.—FANS AND PARASOLS.—Geo. Mallory, Bridgeport, Conn. (Assignee of Wm. R. White) Patented May 15, 1866.

I claim the combination of the following instrumentalities, viz.: The hoop handle, and drawn cylindrical wrapped substantially as hereinbefore set forth.

Also the combination of the following instrumentalities; viz: the hoop brace, and handle; substantially as hereinbefore set forth.

Also the combination of the following instrumentalities, viz; the hoop, handle, and joint between the handle and hoop, substantially as hereinbefore set forth.

Also the combination of the following instrumentalities, viz: the hoop handles joint, and cover or wrapper, substantially as hereinbefore set forth.

Also the combination of the following instrumentalities, viz.: the hoop, handle, joint and fastening to hold the handle in its position, substantially as hereinbefore set forth.

Also the combination of the following instrumentalities, viz.: the hoop, handle joint fastening, and cover as hereinbefore set forth.

2,789.—MAKING THICK PAPER.—S. G. Levis, Kelleysville, Pa. Patented, Feb. 14, 1854.

1st, Passing or carrying a sheet of paper pulp through or between the press rolls and expressing the water therefrom between two endless felts so arranged that the water may pass through the felts and run off freely in front of the rolls.

2d, Running or operating two or more forming cylinders in connection with the press roll by means of or in combination with the two endless felts each receiving its sheet of pulp from a separate forming cylinder so arranged that the water passes through the felts and runs off at the ends of the rolls.

3d, The combination of the two forming cylinders, C and D, the two endless felts, E and H, and the two squeeze rollers, F F', arranged and operating substantially as described.

DESIGNS.

2,804.—PARLOR COOK STOVE.—Wm. Caven and Chas. Stemler (assignors to Redway and Burton), Cincinnati, Ohio.

2,805.—EMBLEM.—M. B. Dyott, Philadelphia, Pa.

2,806.—FLOOR OIL CLOTH PATTERN.—Jos. Robley (assignor to W. M. Brashes & Co.), Brooklyn, N. Y.

2,807.—ORGAN CASE.—J. R. Lomas, (assignor to the "B. Shoninger Melodeon Company") New Haven, Conn.

2,808.—TRADE MARK.—Ferdinand Menssing, N. Y. City.

2,809.—COOK STOVE.—Garrettson Smith, and Henry Brown, Philadelphia, Pa.

2,810.—COOK STOVE.—Garrettson Smith, and Henry Brown, Philadelphia, Pa. (assignor to D. L. Bartlett and H. W. Robbins,) Baltimore, Md.

2,811.—LABEL BORDER.—A. D. Thurber, New York City.

2,812.—TRADE MARK.—Geo. Wilson, Ware, Mass., (assignor to Otis Company).

2,813.—COOK STOVE.—Thomas, James and Wm. Armstrong, Port Deposit, Md.

2,814.—MODEL OF THE ANCIENT CITY OF JERUSALEM.—J. G. Evans, Albany, N. Y.

2,815.—TRADE MARK.—Chas. Griffith, New York City.

2,816.—BOTTLE.—Henry Schlichter, and Henry A. Zag, Philadelphia, Pa.

PENDING APPLICATIONS FOR REISSUES.

Application has been made to the Commissioner of Patents for the Reissue of the following Patents, with new claims as subjoined. Parties who desire to oppose the grant of any of these reissues should immediately address MUNN & Co., *37 Park Row, N. Y.*

18,327.—MANUFACTURE OF METALLIC SQUARES.—Samuel Darling, Bangor, Me. Dated Oct. 6, 1857. Application for reissue received and filed Oct. 11, 1867.

I claim a square whose tongue and beam are united by solder, substantially as described.

A square, the beam of which is made of three pieces, substantially as described.

A square, whose beam is composed of three pieces, and the tongue of which is soldered in, substantially as described.

A square, the beam of which is faced on its sides with wood, substantially as described.

A square, constructed with the central portion of its tongue softer than the margin thereof, substantially as described.

A tongue for squares, which is hardened at its edges, and soft in the center, substantially as described.

The mode or process described of hardening the edges of the tongue, by pressure between plates of cold iron.

The mode or process described of hardening the edges of the tongue, by confining it between pieces of iron, and then heating and tempering as described.

12,590.—SCREW WRENCH.—L. D. Gilman, Troy, N.Y. Dated March 27, 1855. Additional improvement dated July 17, 1855. Application for reissue received and filed Oct. 14, 1867.

1st, I claim making the bar of the wrench thicker, as shown at F, substantially as hereinbefore set forth, and for the purposes described.

2d, I also claim the combination of the toothed plate, J, eccentric or cam, K, and adjustable plate, N, with the handle of the wrench, for the purpose of operating the jaws thereof, substantially as hereinbefore set forth.

50,011.—INSTRUMENT FOR OPENING SEALED AND OTHER CANS.—E. H. Bourne, E. Damm, Jr., and H. M. Knowles, Cleveland, Ohio, assignees of S. D. Lecompte, Leavenworth City, Kansas. Dated Sept. 19, 1865. Application for reissue received and filed Oct. 15, 1867.

1st, I claim a can opener, constructed of a cutter or knife connected to a cutter or handle, having a point so arranged in relation to said holder as to form an axial pivot for the cutter in opening cans.

2d, The point, when so arranged in relation to the holder and cutter that it acts as a point in perforating the can and an axial pivot for the cutter.

62,158.—DEVICE FOR SLAUGHTERING HOGS.—William M. Savage and Richard Savage, Chicago, Ill. Dated February 19, 1867. Application for reissue received and filed Oct. 14, 1867.

1st, We claim the combination of the clutch, A B, and chains, C, or their equivalent, with a swivelled hook, substantially as and for the purpose specified.

2d, In combination with the above we claim the antifriction roller or sheave C, arranged as and for the purposes described and set forth.

3d, We claim, in combination with the clutch, A B, chains, C, and hook, E, the arrangement of a handle, H, substantially in the manner and for the purposes specified.

4th, We claim the combination of the clutch, A B, supported upon chains or rods as specified, with the hook or bar, E, and its appendages, to wit: the roller handle and eyelet, the whole constructed and operating substantially as herein described and specified.

49,354.—HORSE HOE CULTIVATOR.—R. B. Dunn and John C. Flint (assignees by mesne assignments of Albion Webb), Bangor, Me. Dated August 8, 1865. Application for reissue received and filed October 8, 1867.

1st, We claim securing the share to a plate in such a manner as to be readily removed therefrom, or secured thereto, substantially as described.

2d, The employment of teeth or cogs, as a means of adjustment, and holding in position a movable blade, substantially as described.

3d, Providing a wing or blade, and the part of which it is connected, with a rib in one and a series of notches or grooves in the other to set and hold the blade in position.

4th, In combination with such rib and notches, a bolt and nut, or their equivalents, to loosen and tighten the same as desired

5th, To supporting the shares by means of rods and eyes, as to admit of lowering or raising the shares, either at their front or at their rear ends, substantially as shown and described.

6th, Providing the cross bars with slots or their equivalents, as and for the purpose described.

7th Providing the cross bars with notches to receive the eyes of the loops which secure the share supporting rods in the desired positions.

8th, The curved support, D, made of a single block, when constructed and applied as and for the purposes described.

34,128.—HORSE HOE.—R. B. Dunn and John C. Flint, Bangor, assignments by mesne assignments of Moses Chandler, East Corinth, Me. Dated January 14, 1862. Application for reissue received and filed Oct. 8, 1867.

We claim the employment of two shares converging towards their rear, and made capable of adjustment to or from each other, either at their front or rear, or both.

So attaching or jointing the forward ends of these shares to their supporting rods, so that they may be turned and adjusted thereon as centers, more or less obliquely, relatively to the beam.

The means substantially as described for adjusting vertically the rear ends of the shares to vary the depth of their penetration into the earth.

The combination with the shares of pivoted wings, extending rearwards therefrom.

So connecting the wings to the shares as that they will partake of their vertical adjustments, and also admit of being thrown up out of action when not needed.

A wing constructed with a slightly concave curvature, on its under side, to round up the earth as the furrow is covered.

Supporting the shares upon bent rods capable of being adjusted, laterally in the devices which hold them in position.

Supporting the shares, both at front and rear, upon such rods, to admit of either end being adjusted relatively to the other.

Securing adjustably and steadying the share supporting rods to the beam by means of screw headed eyes or loops and nuts.

The adjustable and yielding cultivator blades, adapted to be lifted and thrown out of action when desired.

The means substantially as described for adjusting the cultivator blades, and their supports, to or from each other, without unfastening them from the bars to which they are secured.

Forming in one piece the cultivator blade support, and the coiled spring which sustains it, and admits of its various movements, substantially as described.

The provision in the beam of a slot, J, as and for the purpose described.

The adjustable stay rod, as and for the purpose described.

The combination with the stay rods, which brace the shares of the slot in the beam and means for firmly securing the rods in variable positions, substantially as described.

☞ NOTE.—*The above claims for Reissue are now pending before the Patent Office and will not be officially passed upon until the expiration of 30 days from the date of filing the application. All persons who desire to oppose the grant of any of these claims should make immediate application to* MUNN & CO., *Solicitors of Patents, 37 Park Row, N. Y.*

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[Condensed from the "Journal of the Commissioners of Patents."]

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2,318.—ENGRAVING MACHINE.—John C. Guerrant and Benton J. Field, Leakesfield, N. C. Aug. 1, 1867.

2,513.—COTTON BALE TIE.—Daniel Swett, Vicksburg, Miss. Sept. 5, 1867.

2,530.—SAFETY VALVE.—Geo. W. Richardson, Troy, N. Y. Sept. 5, 1867.

2,572.—MACHINERY FOR POLISHING, GRINDING, AND EDGING SLABS OF MARBLE, SLATE, ETC.—Stinson Hagaman, Welsport, Pa. Sept. 11, 1867.

2,600.—INCREASING THE EFFICIENCY OF STEAM FOR MOTIVE POWER PURPOSES.—John B. Tarr, Chicago, Ill. Sept. 14, 1867.

2,606.—TREATMENT AND PREPARATION OF MINERAL OILS AND SPIRITS FOR ILLUMINATING AND OTHER PURPOSES.—Henry Chadburn, St. Louis, Mo. Sept. 16, 1867.

2,429.—FASTENING FOR PAPER BAGS AND PARCELS.—Charles E. Atwood and George W. Davis, New York City. Aug. 24, 1867.

2,481.—WINDOW SASH FASTENER.—James C. Butterworth, Jr., Providence, R. I. Sept 2, 1867.

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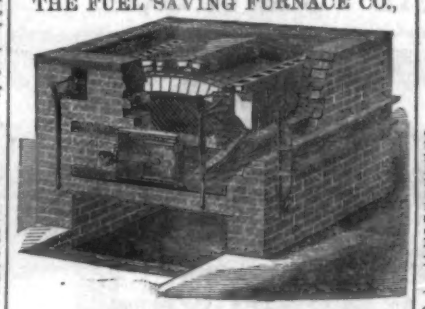

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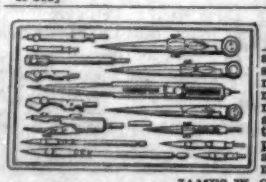

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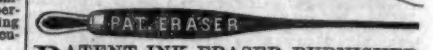

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